132

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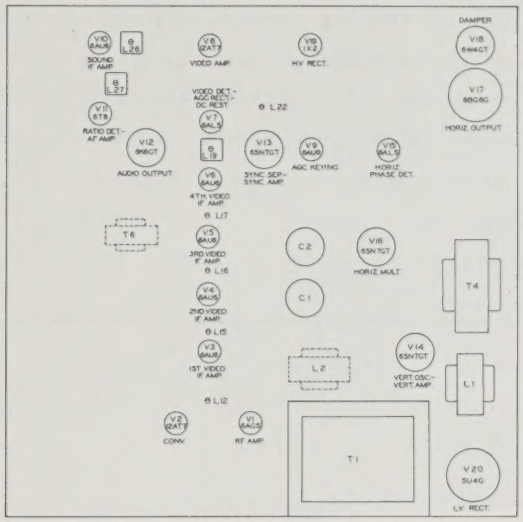
SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 8 SET #124	
Model C-1724A (Ch. 17AY21)	Raytheon Model C-1724A television receiver has been added to the group of models covered in Photofact Folder 8 Set #124. This additional model uses chassis 17AY21 which is used in Model C-1716A.
Chassis 16AY211 and 17AY24	A tube layout diagram for chassis 16AY211 and 17AY24 is given below.



TOP VIEW

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CONTINUED ON REVERSE SIDE

RAYTHEON CHASSIS 16AY28, 16AY211, 17AY21, 17AY24.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 SET #124	
	The following production changes were made on Sentinel Models 423, 424, 1U423 and 1U 424, and models 423B, 423-17, 424-17, 1U423B, 1U423-17, 1U424-17 were added to the list in Photofact Folder 9 Set #124.
Series YA Chassis	Series YA chassis is covered in Photofact Folder 9 Set #124. However the vertical size control part number should be 28E45.
"Series YB" Chassis	The horizontal output transformer T3 changed to part number 22E61-2. C77 removed. A 5MMF capacitor added across R41 when wire wound resistor is used. A .01MFD capacitor and a 5600Ω resistor in series were added between the cathode of the picture tube and the tap on the vertical output transformer.
"Series YC" Chassis	A color converter socket and plug was added to YC chassis. V13 vertical oscillator tube changed to type 6J5. A 3/8 amp. fuse added between center tap and ground on high voltage secondary winding of the power transformer T1. A tie lug added near 5U4G and 6AL5 tube sockets as test point for measuring 6BQ6GT grid voltage.
Series YC Chassis (Late Prod.)	R55 removed. Pin 2 of V12 grounded to chassis. R57 changed to 1.2 meg.
"Series YD" Chassis	V19 changed to 1B3GT tube. The horizontal output transformer changed to part number 22E61-3. R58 changed to 10KΩ V6 changed to 6CB6 and jumper wire added to socket between pins 2 and 7.

SENTINEL MODELS 420B, 423, 423B, 423-17, 1U423, 1U423B, 1U423-17, 1U-424, 1U424-17.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

Chassis 16AY211 and 17AY24	The pin connections on V14 are reversed from that shown on the schematic. V13 is type 6K6GT R67 is 680Ω R95 changed to 1 meg. R96 changed to 470KΩ. C62 changed to 470MMF.
Chassis 16AY28, 16AY211, 17AY21, 17AY24	When the C-201-19817 horizontal output transformer, T3, is used, either a 2.2Ω resistor or an RF choke coil, part number A-16A-18785, will be connected in series with the filament of the HV rectifier tube V20. In some chassis the following 1000Ω resistors have been replaced with RF choke coils part number A-16A-18676 or A-16B-16023. (R15, R20, R23, R24, R27, R28 and R31). When the choke coils are used C34 and C43 are changed to .005MFD capacitors and C44 and C49 are not used. The ion trap M5 was changed to part number B-16M-19906. R64 changed to 1.8 meg. R82 changed to 3900Ω R74 changed to 47KΩ

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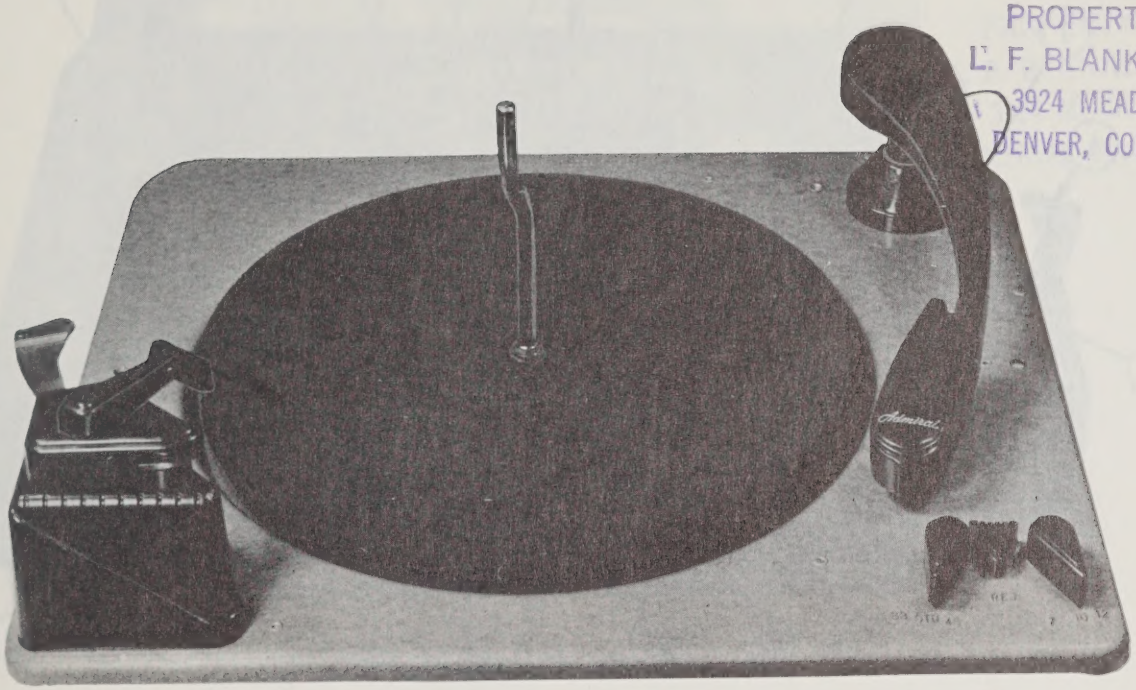

Figure 1.

ADMIRAL
MODEL RC500

General Information

The Admiral Model RC500 record changer is designed to automatically play and change up to twelve - 10″, 78 or 33-1/3 RPM records; ten - 12″, 78 RPM or twelve - 12″, 33-1/3 RPM records; fourteen - 7″, 45 RPM records or ten - 7″, 33-1/3 RPM records at a single loading.

CAUTION: Do not intermix these records. The last record will be repeated until the changer is turned off.
Power Supply is 115 volts A. C.

Manufactured By:

Admiral Corporation
3800 Cortland Street
Chicago, Illinois

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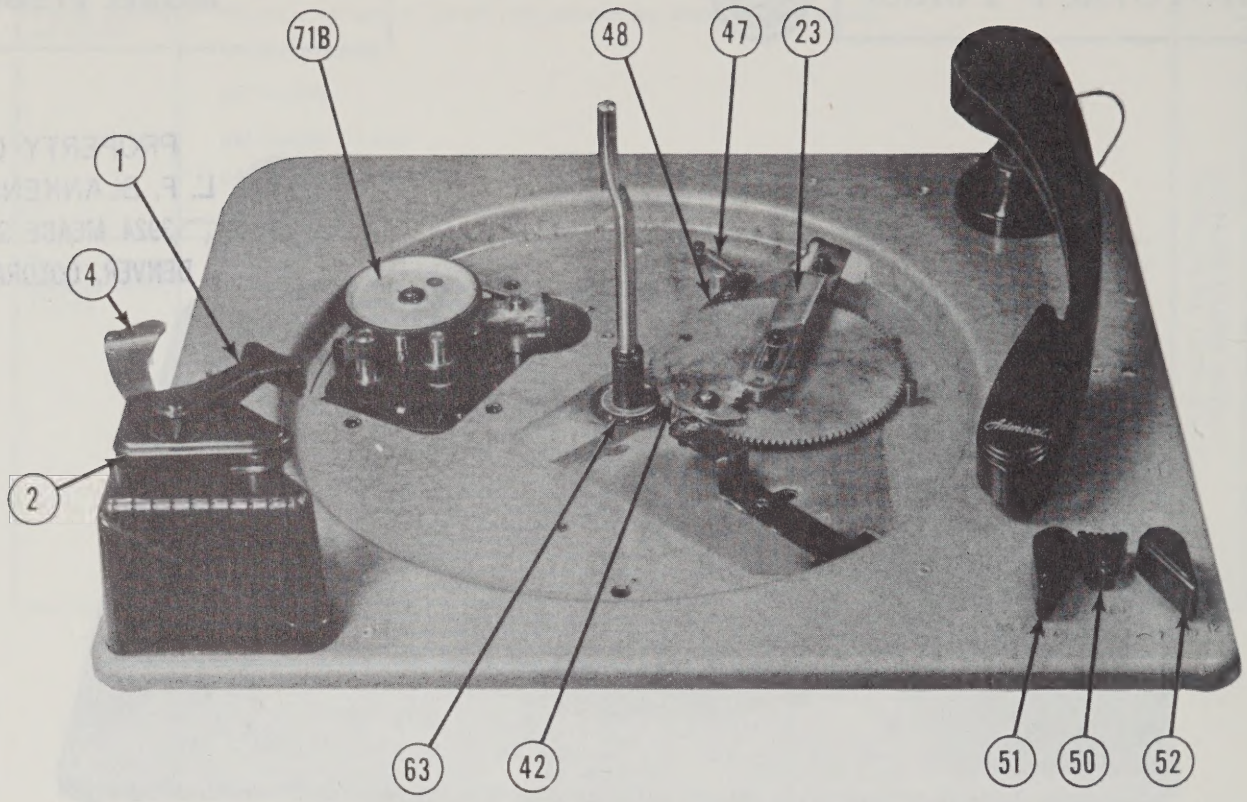

Figure 2.

Operating Instructions

Setting for Size of Record:

The size of the record for which the changer is set (7" - 10" or 12") is indicated on the baseplate. To select the proper size, turn the size control knob to the desired position.

Setting Speed Change Knob:

To select the proper speed for type of record to be played, turn the speed control knob (51) to its proper position (33-Std.-45). "Std." indicates standard 78 RPM.

Setting Push-Off Assembly:

To play 10" records, pivot the push-off assembly toward the centerpost and away from the centerpost for 12" records. To play 7" records, rotate the push-off assembly to the 10" position and move the 7" record support (4) toward the centerpost.

Loading and Starting:

1 - Place a stack of records over the centerpost so that they rest on the record support (7) and the offset of the centerpost.

2 - If 10" or 12" records are to be played, place the record clip (1) on top of the records.

3 - To play 7" records, swing the 7" record support (4) toward the spindle and place the records on the record support and offset of the centerpost.

4 - In order to play 45 RPM records, the adapter must be inserted in the center hole of the record.

5 - To turn on the changer, the function switch on the radio must be turned to the "Phono" position.

6 - To place the changer in automatic operation, move the reject knob (50) to "Rej." and release.

7 - A record may be rejected at any time, during playing, by moving the reject knob to "Rej." and releasing.

8 - To turn the changer off, turn function switch on the radio to "Radio."

CAUTION: Do not turn the changer off during the change cycle.

(a) Move the tone arm out from the centerpost to clear the records.

(b) Remove the records from the turntable. For 10" and 12" records, the record clip must be clear of the records.

CHANGE CYCLE

This mechanism is driven by the idler wheel (71B) which rides against the inside rim of the turntable (22). The turntable speed is determined by one of three drive shafts which ride against the rubber tire of the idler wheel (71B). These drive shafts are

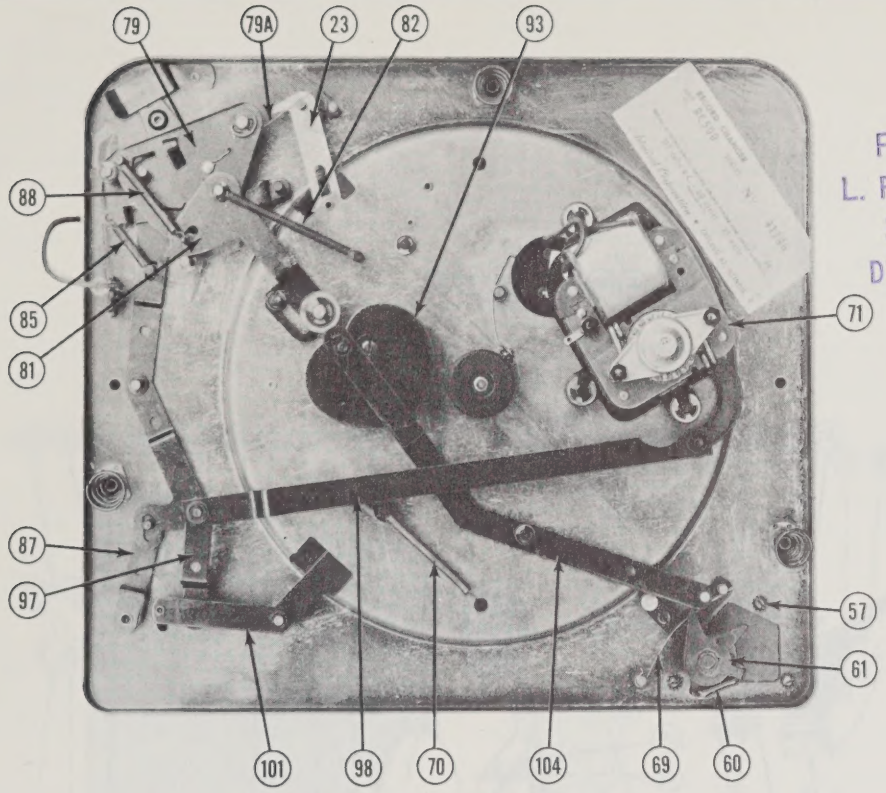

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Figure 3.

shifted in and out of position, mechanically, by the speed control knob (51) and the speed control link (103).

The cycling mechanism is driven through its change cycle by means of the drive gear (46), which, in turn, is driven by the geared hub of the turntable. When the mechanism is out of cycle, the "open space" on the drive gear is held next to the turntable hub by the gear indexing arm (48) and spring (47).

This mechanism utilizes what is commonly known as a velocity trip, which consists of two main parts: the trip motion arm (42) and the gear engagement pawl (43). While a record is being played, the trip slider (23) is moved slowly by the stud on the arm control lever (78), which moves with the tone arm. The stud on the trip slider (23) rides against the trip motion arm (42), moving it very slightly. The gear engagement pawl (43) and the trip motion arm (42) are held together by the trip friction washer (41), and the gear engagement pawl (43) is moved inward slightly with the trip motion arm (42). Since this movement is only slight, the vertical catch on the gear engagement pawl (43) is just touched and "kicked away" by the lug on the turntable hub. This occurs with each revolution of the turntable until the gear engagement pawl is moved in rapidly enough to be positioned in front of the lug before the next rotation of the turntable.

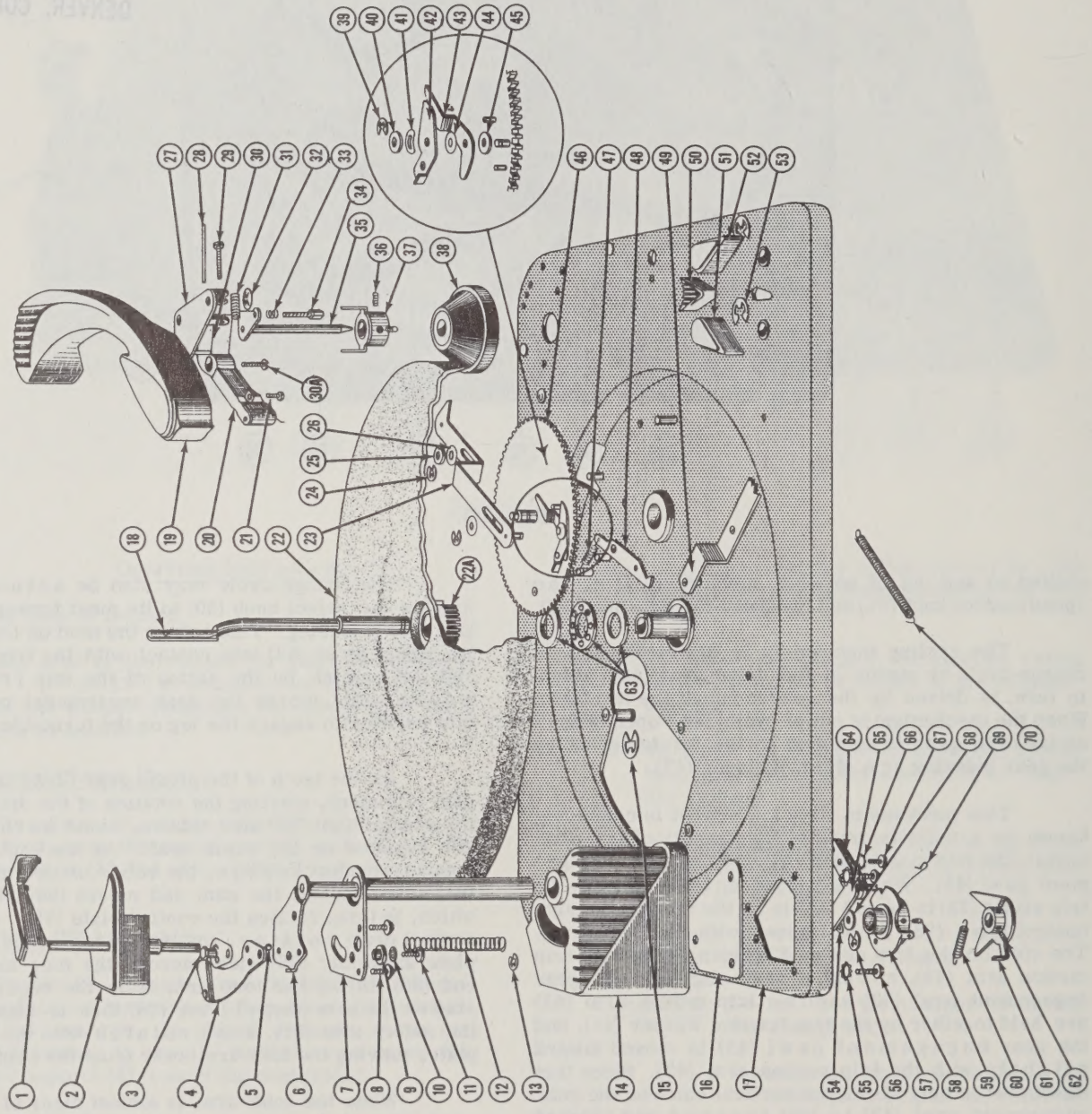
As the needle enters the eccentric groove of the record, the trip slider (23) is moved in rapidly by the tone arm. The gear engagement pawl (42) then moves in front of and engages the lug on the turntable hub. This causes the drive gear (46) to be rotated far enough so that the teeth on the drive gear will engage the teeth on the turntable hub and start the change cycle.

The change cycle may also be actuated by moving the reject knob (50) to its most forward position and releasing. This brings the stud on the end of the reject lever (49) into contact with the trip motion arm (42), which, by the action of the trip friction washer (41), moves the gear engagement pawl (43) into position to engage the lug on the turntable hub.

As the teeth of the pinion gear (22A) and drive gear (46) mesh, starting the rotation of the drive gear, the control cam (98) also rotates, since both parts are mounted on the same shaft. As the control cam rotates counterclockwise, the roller on the drive link (94) rides against the cam and moves the drive link, which, in turn, rotates the control plate (79). As the control plate rotates, the incline tab on the control plate assembly (79) rides across the tone arm lift rod (35), lifting the tone arm from the record. The stud on the arm control lever (78) then is engaged by the safety arm (81), which rotates with the control plate, moving the tone arm away from the centerpost.

When the tone arm is almost clear of the record, the stud on the push-off link (104) pivots the push-off arm (61) counterclockwise. Since the push-off arm is secured to the push-off plate and shaft (6), the push-off plate is also pivoted. Just before the control cam (98) reaches half of its rotation, the tone arm will be positioned as far as possible from the centerpost and the push-off plate (6) will "push off" the record to the turntable.

As the control cam (98) rotates through the second half of the change cycle, the push-off plate is returned by the push-off arm return spring (60) and the remainder of the stack of records drops to the record support (7).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A PHOTOFACT "EXPLODED" VIEW
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At the same time, the tone arm is returned by the set-down spring (85), which causes the set-down indexing stud on the size change plate (74) to ride against the indexing portion of the arm control lever (78).

The tone arm will move toward the record until the set-down indexing stud on the size change plate has reached the indexing point (end of cut-away section) on the arm control lever. After the arm stops moving inward, the lift rod will ride down the control plate incline and lower the tone arm to the record. Just before the tone arm touches the record, the safety arm engages the stud on the size change plate (74) and pivots it away from the arm control lever (78), releasing the tone arm.

The set-down point is determined by the position of the size change plate (74), which can be set for 7-inch, 10-inch or 12-inch set-down by the record size selector knob.

ADJUSTMENTS

Height Adjustment:

If the height adjustment is correct, the needle of the tone arm should clear the baseplate (17) by approximately 1/4" when the changer is out of cycle. In this position, the tone arm will clear a stack of records (listed on page 1) on the turntable and will clear the bottom of a record resting on the centerpost and record support. To adjust the height of the tone arm, turn screw (34) in to raise the arm, and out to lower the arm.

Set-Down Adjustment:

1 - Place a 10" record on the turntable.

2 - Turn the size selector knob (52) to "10."

3 - Push the reject knob (50) to "Rej." and release.

4 - Rotate the turntable clockwise, by hand, until the tone arm starts its downward travel to the record. Adjust the set-down of the tone arm by the set-down adjusting screw (29), accessible through the hole in the right side of the tone arm, until the needle is directly over the starting groove of the record. Check this adjustment by rejecting several 10" records. If this adjustment is correct, it will also be correct for 7" and 12" records.

Velocity Trip:

This record changer uses a velocity-type trip, which depends upon a rapid movement of the tone arm toward the centerpost in any area between 2-7/8" to 7/8" from the center of the record. This trip requires no adjustment; however, in order for the changer to trip properly, there must be sufficient friction between the trip motion arm (43) and the gear engagement pawl (42). If the friction is lost, a small amount of lubriplate No. 110 should be placed between these parts. If this does not help, it may be necessary to replace the trip friction washer (41).

Positioning Record Support:

If the record support (7) is not positioned evenly, under the bottom record of a stack to be played, one side of the record may drop to the turntable before the other. If the contour of the record and record support do not match, adjust the push-off assembly as follows:

1 - Rotate the push-off assembly to the 10" position.

2 - Place a 10" record on the step of the spindle and allow it to rest on the record support.

3 - Loosen the screw that holds the push-off positioning arm assembly (64) stationary.

4 - Pivot the push-off assembly to the point where the edge of the record support "lines up" with the edge of the record.

5 - Remove the record and tighten the screw.

6 - Load the changer with a stack of 10" records and "reject" the entire stack to the turntable. Check to see that all records drop to the turntable evenly.

Adjusting Distance Between Record Support and Centerpost:

If records do not push off satisfactorily, or more than one record drops to the turntable during the change cycle, it may be necessary to adjust the distance between the centerpost and the record support. Make this adjustment as follows:

1 - Rotate the push-off assembly to the 10" position.

2 - Hold the centerpost as far away from the push-off assembly as possible.

3 - Measure the distance from the edge of the record support (7) to the inside edge of the offset shelf on the centerpost. This distance should be between 4-29/32" and 4-31/32."

4 - To adjust this distance, loosen the three screws (57), Figure 3. Then move the assembly until the specified distance is obtained.

5 - Tighten the three screws (57) and recheck the distance. Place a stack of records on the changer and reject each record to the turntable. If one side of the record drops to the turntable before the other, it may be necessary to make the "Positioning Record Support" adjustment.

TROUBLES

Changer Fails to Trip:

1 - Check the trip slider (23) to see if it moves freely.

2 - Check the trip motion arm (43) and gear engagement pawl (42) to see if they are working properly. See "Velocity Trip."

3 - Check tension on trip function washer (41). If necessary, replace with new washer.

4 - Check for grease or oil on trip slider.

5 - Check for broken, loose, or misplaced trip slider return spring (79A), Figure 3.

Continuous Tripping:

1 - Check for loose or weak spring (47).

2 - Check for bent trip slide return spring (79A), Figure 3.

3 - Check for bent trip slider (23).

Tone Arm Does not Set Down Properly:

1 - Check set-down adjustment. See "Set-Down Adjustment."

2 - Check to see that the record size selector knob (52) has locked into position.

3 - Check for broken, weak, or missing control plate return spring (82).

Tone Arm Skips Across Records:

1 - Check cabinet to see if it is level.

2 - Worn or damaged needle. Replace.

3 - Check height adjustment.

Changer Causes Rumble or Noise:

1 - Be sure that the shipping screws on each side of the baseplate have been removed.

2 - Check for any mechanical rub near the 3-speed motor.

3 - Check for broken or missing baseplate float spring.

More Than One Record Drops to Turntable:

1 - See "Adjusting Distance Between Record Support and Centerpost."

Changer Trips into Change Cycle Before Finishing Record:

1 - Check for foreign material between trip motion arm (43) and gear engagement pawl (42).

2 - Check for bent trip slider return spring (79A).

3 - Check for bent trip slider (23).

Records Fall to Turntable Unevenly:

See "Positioning Record Support."

Changer Stalls in Change Cycle:

1 - Oil or foreign material on idler wheel (71B), drive belt and turntable rim. Clean with carbon tetrachloride.

2 - Check for binding parts.

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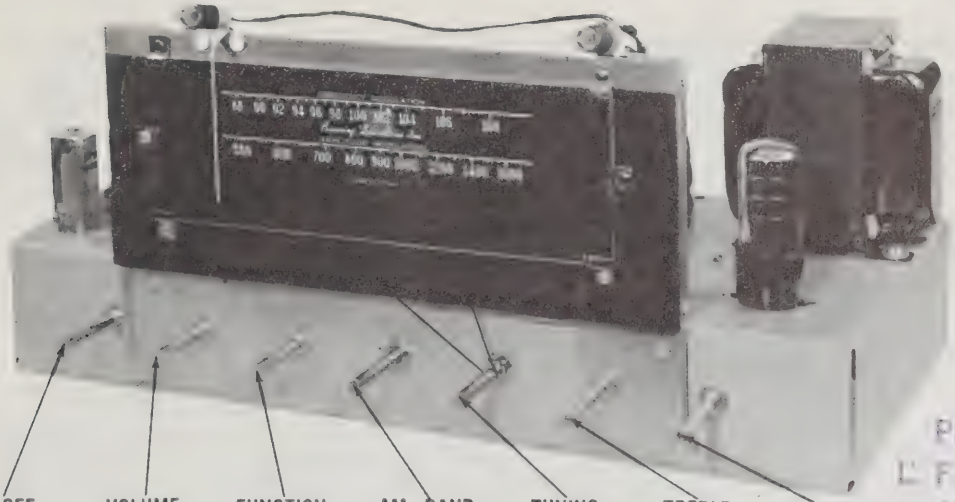
PARTS LIST - ADMIRAL RC 500

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	G400A511	Record Clamp and Shaft		409A13	Pickup Cartridge (with knurled nut)
2	403B53	Push-off Plastic Cap			
3	402A249	Push-off Plate Nut	21	1A72-1-20	Cartridge Mounting Screw (2 req.)
4	G400A510	7" Record Support			
5	415A28-1	Ball Bearing (1/4" diameter)	22	G400B507	Turntable
6	G400A509	Push-off Plate and Shaft Assembly	23	G400A535	Trip Slider and Stud Assembly
			24	401A355-1	"C" Washer
7	G400A508	Record Support and Tube Assembly	25	4B1-67-47	Washer (.196 x 5/16 x 1/32")
			26	4B2-178-0	Washer (.196 x 3/8 x 1/64")
8	1A72-2-20	Screw, Shakeproof Type 25 (#4 x 5/16)	27	G400A526	Tone Arm Mounting and Pivot Plate Assembly
9	402A250	Spacer Washer	28	414A43	Pivot Shaft
10	3B1-23-47	Lockwasher #4 I. T.	29	45-750-C2-47	Set-Down Adjusting Screw #4-40 x 3/4" B.H.M.S.
11	45-375-C2-47	Screw No. 4 x 3/8 B.H.M.S.			
12	405A136	Record Clamp Spring	30	404A31	Tone Arm Counterweight
13	401A355-1	"C" Washer	31	405A137	Set-Down Adjusting Lock Spring
14	403C50	Plastic Push-off Housing			
15	401A355-4	"C" Washer, Motor Mounting (3 req.)	32	2B10-5-59	Speed Nut (2 req.)
			33	405A138	Lift Adjusting Spring
16	401A346	Housing Bottom Plate	34	402A45	Lift Adjusting Screw
17	G400D561	Baseplate	35	G400A520	Lift Rod and Plate Assembly
18	G400B505	3pindle	36	402A247	Allen Set Screw (3 Req.)
19	403C51	Tone Arm	37	G400A525	Tone Arm Support and Hub
20	409A13-1	Pickup Cartridge (without knurled nut)	38	403A52	Tone Arm Plastic Base
			39	401A355-1	"C" Washer

PARTS LIST (cont'd)

REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
40	4B1-68-47	Washer	72	406A19	Motor Mounting Grommet (3 req.)
41	401A353	Trip Friction Washer			
42	401A351	Trip Motion Arm	73	412A38	Motor Mounting Washer
43	401A352	Gear Engagement Pawl	74	G400A546	Set-Down Change Plate and Arm Assembly
44	412A36	Fibre Washer (.196 x 3/8" x .005)	75	402A238	Spacer
45	402A229	Trip Pivot Stud	76		Set-Down Change Arm (Part of Item 74)
46	G400A532	Drive Gear and Stud Assembly			
47	405A134	Gear Indexing Spring	77	401A358	Spacer Washer
48	G400A549	Gear Indexing Arm and Stud Assembly	78	G400A542	Arm Control Lever and Shaft Assembly
49	G400A551	Reject Arm and Stud Assembly	79	G400A537	Control Plate Assembly
50	403A55	Reject Knob	80	401A355-2	"C" Washer
51	403A54	Speed Change Knob	81	401A345	Safety Arm
52	403A54	Record Size Selector Knob	82	405A132	Control Plate Return Spring
53	401A355-2	"C" Washer	83	415A28-2	Ball Bearing (5/32" Diameter)
54	405A22	Spring Washer			
55	3B1-3-47	Lockwasher, No. 6 E. T.	84	1A70-11-20	Plastiscrew (No. 6 x 7/16")
56	401A355-1	"C" Washer	85	405A130	Set-Down Spring
57	1A68-13-20	Plastiscrew, No. 6 x 5/8" R. H.	86	401A332	Set-Down Change Link
			87	G400A554	Set-Down Change Arm and Stud Assembly
58	G400A514	Push-off Index Plate and Hub Assembly	88	405A131	Safety Spring
59	402A247	Allen Set Screw	89	G400A538	Drive Link and Stud Assembly
60	405A133	Push-off Return Spring			
61	G400A517	Push-off Arm and Hub Assembly	90	405A22	Spring Washer
			91	401A355-1	"C" Washer
62	1A43-14	Allen Set Screw	92	401A173	Washer
63	415A11	Thrust Bearing	93	G400A548	Control Cam and Stud Assembly
64	G400A565	Push-off Positioning Arm Assembly	94	401A145	Control Cam Washer
65		Push-off Positioning Arm (part of Item 64)	95	3B1-26-47	Lockwasher, No. 8 I. T.
			96	85-375-C2-47	Screw, No. 8-32 x 3/8" B.H.M.S.
66	3B1-3-47	Lockwasher No. 6 E. T.			
67	65-187-C2-47	Screw, No. 6-32 x 3/16" B.H.M.S.	97	G400A558	Speed Change Arm and Stud Assembly
68	4B1-68-47	Washer	98	401A322	Speed Change Link
69	414A40	Push-off Indexing Spring	99	406A24	Speed Change Link Grommets (2 req.)
70	405A135	Reject Return Spring			
71	407B19	Phono Motor Complete	100	401A355-1	"C" Washer
71A	405A15	Idler Wheel Retaining Clip	101	G400A551	Reject Arm and Stud Assembly
71B	G400A279	Idler Wheel Assembly			
71C	412A30	Fibre Washer (2 req.)	102	4B1-68-47	Washer
71D	98A15-20	Idler Wheel Spring	103	401A355-1	Retaining Ring
71E	406A20	Drive Belt (2 req.)	104	G400A562	Push-off Link and Stud Assembly



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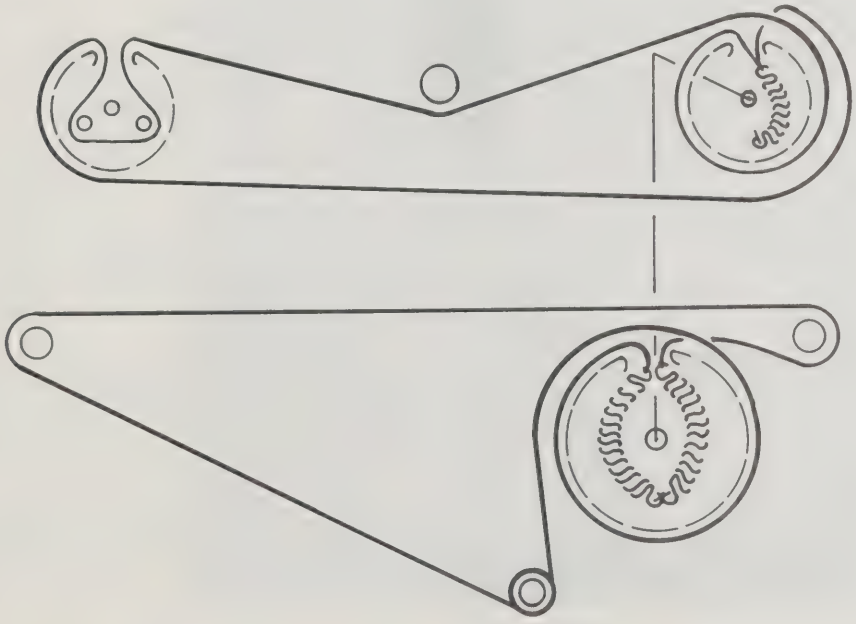
BROWNING
MODEL RJ-20A

BROWNING
MODEL RJ-20A

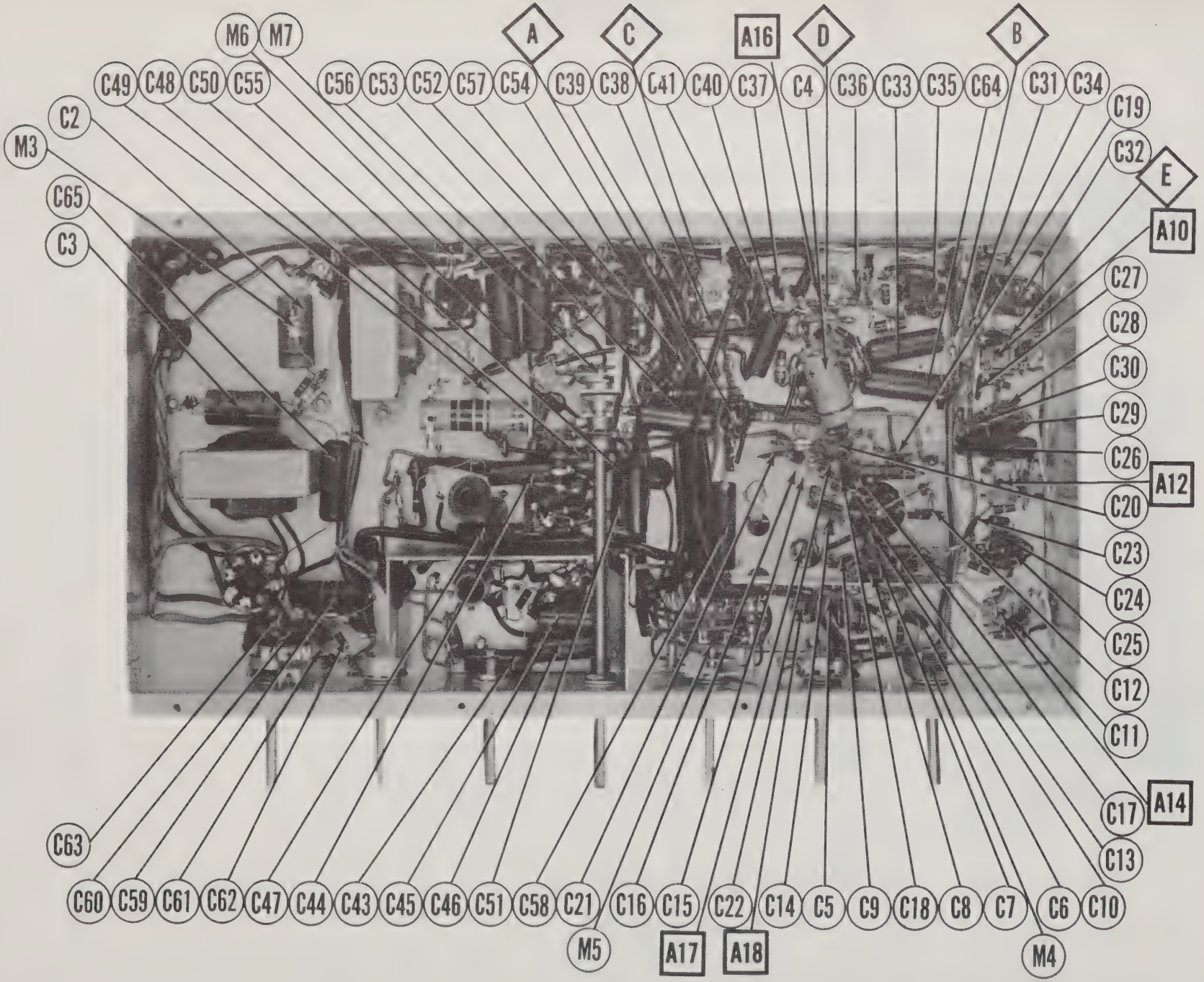
TRADE NAME	Browning, Model RJ-20A
MANUFACTURER	Browning Laboratories Inc., Winchester, Mass.
TYPE SET	AC Operated AM-FM Superheterodyne Tuner
TUBES (FIFTEEN)	Types 6AU6 FM RF Amp., 7F8 FM Converter, 6J6 AFC Reactance, 6AU6 1st. FM IF Amp., 6AU6 2nd. FM IF Amp., 6AU6 1st. Limiter, 6AU6 2nd. Limiter, 6AL5 Disc., 6SG7 AM RF Amp., 6SA7 Converter, 6SK7 AM IF Amp., 6AL5 AM Det.-AVC, 6SN7GT AF Amp., 6AL7GT Tuning Eye, 563GT Rectifier
POWER SUPPLY	110-129 Volts AC — RATING .68 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	550-1600KC — FREQ. MOD. 88-108 MC



2 1/2 TURNS
DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


M6
M7
A
C
A16
D
B
C49
C48
C50
C55
C56
C53
C52
C57
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C39
C38
C41
C40
C37
C4
C36
C33
C35
C64
C31
C34
C19
C32
E
C2
M3
C65
C3
A10
C27
C28
C30
C29
C26
A12
C20
C23
C24
C25
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C11
A14
C17
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C63
C60
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C62
C47
C44
C43
C45
C46
C51
C58
C21
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C9
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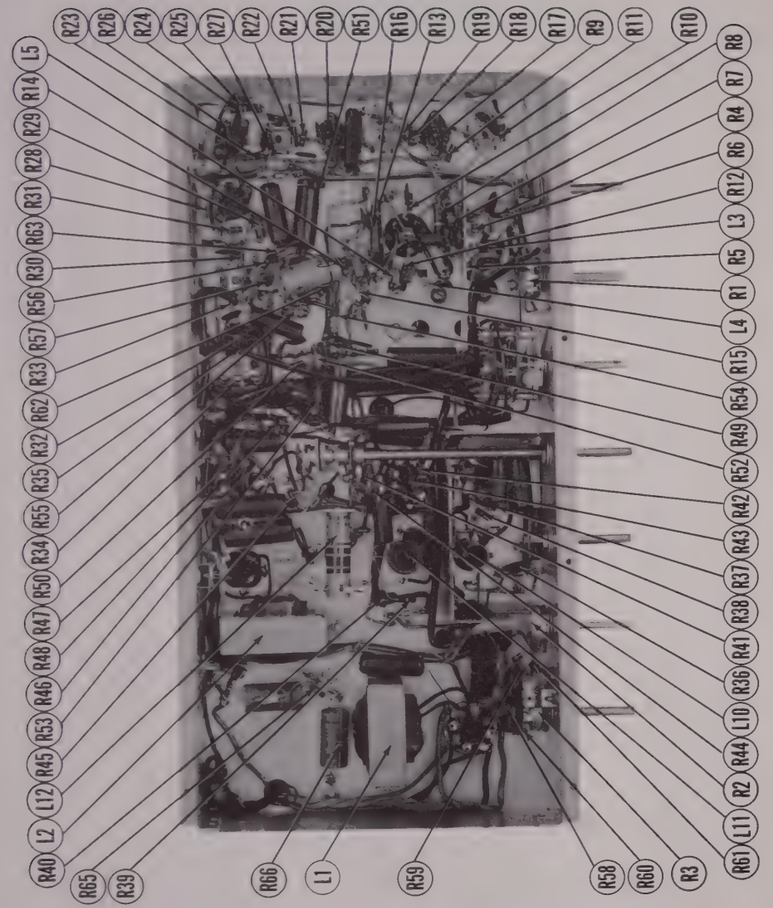
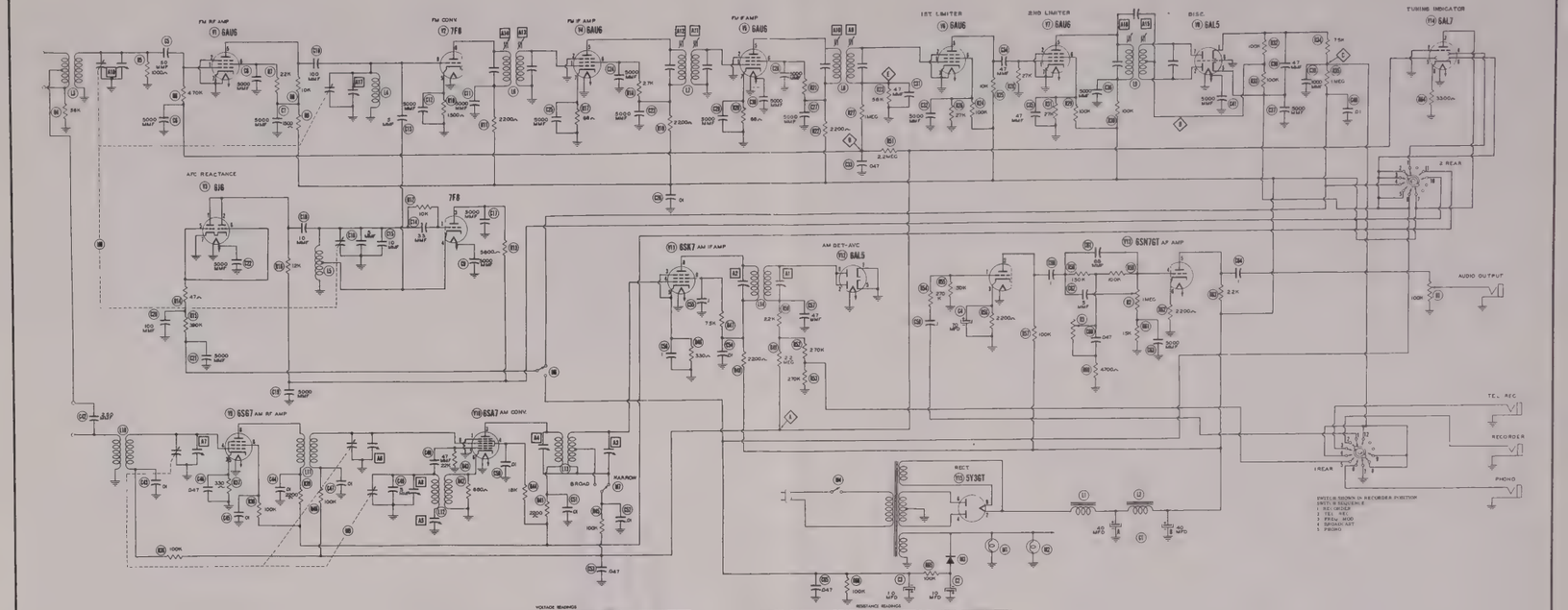
C8
C7
C6
C10
M5
A17
A18
M4





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AU6	- .01VDC	2V	2V	0 .3VAC	180VDC	180VDC	2V	
V 2	7F8	82-3.8VDC	0V	150VDC	0V	95 VDC	365VDC	5 .2VAC	2V
V 3	6J6	160VDC	160VDC	5 .2VAC	0V	6 -1.5VDC 6 -.17DC	6 -1.5VDC 6 -.17DC	0V	
V 4	6AU6	2V	2V	5 .2VAC	0V	180VDC	180VDC	.4VDC	
V 5	6AU6	2V	2V	5 .2VAC	0V	200VDC	180VDC	.4VDC	
V 6	6AU6	- .01DC	2V	5 .2VAC	0V	126VDC	190VDC	0V	
V 7	6AU6	0- .01DC	2V	5 .2VAC	0V	155VDC	245VDC	0V	
V 8	6AL5	-.09DC	-.47DC	5 .2VAC	0V	-1.6VDC	0V	-.47DC	
V 9	6BC7	+1.8VDC	0V	+1.8VDC	+- .1VDC	+1.8VDC	185VDC	5.2VAC	+150VDC
V 10	6SA7	2V	2V	5 .2VAC	+250VDC	+85VDC	0 +1.1VDC	0V	0 +- .4VDC
V 11	6BC7	0V	0V	+3 .1VDC	+- .1VDC	+3 .1VDC	+100VDC	6.3VAC	220VDC
V 12	6AL5	0V	-.47DC	6.3VAC	0V	0V	0V	0V	-.47DC
V 13	6SN7GT	0V	0V	-48VDC	-47DC	0V 7 -1VDC	-48VDC 7 -1VDC	7 .2VAC	0V
V 14	6AL5/6T	0V	2V	155VDC	0 -2.8VDC 6 -2.8VDC	6 -2.8VDC 6 -2.8VDC	6 -2.8VDC	5 .2VAC	-48VDC
V 15	5Y3GT	385VDC	385VDC	0V	330VAC	0V	330VAC	0V	385VDC

MEASUREMENTS TAKEN IN AM OR FM POSITION
5 TAKEN IN FM POSITION
6 TAKEN IN AM POSITION
7 TAKEN IN FM OR AM
8 AFC SWITCH ON

THE COOPERATION OF THE MANUFACTURERS OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AU6	1.5Meg	0Ω	0Ω	1Ω	120KΩ	124KΩ	0Ω	
V 2	7F8	39KΩ	0Ω	215 OHMS	0Ω	1.5KΩ (RESTING)	115.5KΩ (RESTING)	1Ω	0Ω
V 3	6J6	112MΩ	112MΩ	1Ω	0Ω	1.5Meg	1.5Meg	0V	
V 4	6AU6	1.4Ω	0Ω	1Ω	0Ω	15.5KΩ	120KΩ	0Ω	
V 5	6AU6	1.4Ω	0Ω	1Ω	0Ω	15.5KΩ	130KΩ	0Ω	
V 6	6AL5	58KΩ	0Ω	1Ω	0Ω	110KΩ	140KΩ	0Ω	
V 7	6AU6	39KΩ	0Ω	1Ω	0Ω	110KΩ	140KΩ	0Ω	
V 8	6AL5	1.5Meg	0Ω	1Ω	0Ω	39KΩ	0Ω	140KΩ	
V 9	6BC7	3.5MΩ	0Ω	3.5MΩ	1.5Meg	3.5MΩ	∞110MΩ	1Ω	∞15.5KΩ
V 10	6SA7	0Ω	1Ω	∞15.5KΩ	∞15MΩ	33KΩ	3.3Ω	0Ω	1.5Meg
V 11	6BC7	0Ω	0Ω	3.3KΩ	1.5Meg	3.3KΩ	117KΩ	1Ω	17.5KΩ
V 12	6AL5	0Ω	39KΩ	1Ω	0Ω	0Ω	0Ω	56KΩ	
V 13	6SN7GT	39KΩ	140KΩ	3.5KΩ	49KΩ @ 78MΩ	135KΩ	3.3KΩ	1Ω	0Ω
V 14	6AL5/6T	0Ω	0Ω	120Ω	1.5KΩ	1.5Meg	53KΩ	1Ω	3.3KΩ
V 15	5Y3GT	110KΩ	39KΩ	Ref.	120Ω	Inf.	120Ω	Ref.	39KΩ

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set the pointer even with the left end of the white lines.

AM ALIGNMENT

Turn the "broad-narrow" switch to "narrow", (clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1MFD	High side to stator on center section of "AM" tuning gang. Low side to chassis	455KC (400% Mod)	AM (second pos. CW)	Tuning gang fully open.	DC probe to point Ⓗ Common to chassis.	A1, A2 A3, A4	Adjust for maximum deflection
2.	Turn the "broad-narrow" switch to "broad". Tune the signal generator to 3KC each side of 455KC and carefully note the change in VTVm reading. The response should be symmetrical and show a slight dip in the center. If response is not symmetrical or not double peaked, slightly retouch A1 & A3. Return the switch to narrow and check the sharp response. If necessary retouch A3 & A4. To obtain proper response on both "broad" and "narrow" it may be necessary to alternately check and retouch both curves several times.							
3.	250MMF	High side to "AM" antenna terminal. Low side to chassis	1300KC (400% Mod)	AM	1300KC	DC probe to point Ⓗ Common to chassis.	A5	Adjust for maximum deflection.
4.	"	"	1400KC	"	1400KC	"	A6, A7	Adjust for maximum deflection.
5.	"	"	600KC	"	600KC	"	A8	Rock signal gen. freq. and adjust A8 until maximum output occurs at exactly 600KC on sig. gen. scale. Repeat steps 3, 4, & 5 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Turn the AFC switch "off".

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.05MFD	High side to stator on center section of FM tuning gang Low side to chassis	10.7MC (unmod.)	FM (third pos. CW)	Tuning gang fully open.	DC probe to point Ⓗ Common to chassis.	A9, A10 A11, A12 A13, A14	Adjust for maximum deflection. Attenuate signal gen. to maintain 5 volt reading.
7.	Detune the signal gen. to 50KC each side of 10.7MC. The VTVM reading should be essentially the same at either freq. as at 10.7 MC, indicating a flat symmetrical response. If the response does not appear to be flat and symmetrical retouch A9 thru A14 until this condition is obtained.							
8.	.05MFD	High side to stator on center section of FM tuning gang. Low side to chassis.	10.7MC (unmod.)	FM	Tuning gang fully open.	DC probe to point Ⓗ Common to chassis.	A15	Adjust for zero reading. A positive and neg. alive reading will be obtained on either side of the correct setting.
9.	"	"	"	"	"	DC probe to point Ⓗ Common to chassis.	A16	Adjust for maximum deflection. Return VTVM to point C and check to see if zero reading is still obtained; if not, repeat steps 8 & 9.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
6.	.05MFD	High side to pin 1 (Grid of 6AU6 (V5) Low side to chassis	10.7MC ±50KC (SWP)	FM (third pos CW)	Point of non-interference.	Vert. Amp to point Ⓔ Low side to chassis.	A9, A10	Adjust for maximum amplitude and symmetry as per fig. 1.
7.	"	High side to pin 1 (Grid) of 6AU6 (V4) Low side to chassis	"	"	"	"	A11, A12	"
8.	"	High side to stator on center section of FM tuning gang. Low side to chassis.	"	"	"	"	A13, A14	"
9.	"	"	"	"	"	Vert. Amp to point Ⓔ Low side to chassis.	A15, A16	Adjust A15 so 10.7MC occurs at center of crossover lines as per fig. 2. Adjust A16 for maximum amplitude and straightness at crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across "FM" antenna terminals with 120Ω in each lead.	105MC (unmod.)	FM	105MC	DC probe to point Ⓗ Common to chassis.	L5	Expand or compress coil turns for maximum deflection.
11.	"	"	"	"	"	"	A17, A18	Adjust for maximum deflection.

FIG. 1

FIG. 2

CHASSIS—TOP VIEW

PROPERTY OF
L. F. BLANKENSHIP.
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: STANDARD TUBE TYPE	RMA TUBE TYPE	NOTES
V1	FM RF Amplifier	6AU6	6AU6	78K	
V2	FM Converter	7F8	7F8	88W	
V3	AFC Reactance	6J8	6J8	78F	
V4	1st FM IF Amp.	6AU6	6AU6	78K	
V5	2nd FM IF Amp.	6AU6	6AU6	78K	
V6	1st. Limiter	6AU6	6AU6	78K	
V7	2nd Limiter	6AU6	6AU6	78K	
V8	Discriminator	6AL5	6AL5	88T	
V9	AM RF Amplifier	6BQ7	6BQ7	88K	
V10	AM Converter	6BA7	6BA7	8BT	
V11	AM IF Amplifier	6BK7	6BK7	8N	
V12	AM Detector-AVC	6AL5	6AL5	88T	
V13	Audio Amplifier	6V6GT	6V6GT	8CB	
V14	Tuning Indicator	6AL7	6AL7	8CH	
V15	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AF88F		UP74445		TVL-2764	+ Filter
B	10	25							Filter
C2	10	25		PR825/10		BR102A		TVA-1204	AFC Amp. Cathode
C3	10	25		PR825/10		BR102A		TVA-1205	AF Amp. Cathode
C4	.05	500		1468-00005	D6-500	SW94Q5	GPXE-50	1FM-45	RF Coupling
C5	50	500		BPD-005	DD-502	D5D5	811-005	28C1	FM RF Amp. Dec.
C6	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM RF Amp. Screen
C7	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM RF Amp. Fil.
C8	5000	500		1468-00005	D6-500	SW94Q5	GPXE-50	1FM-45	FM RF Plate
C9	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM Conv. Plate Dec.
C10	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM Conv. Cathode •
C11	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM Conv. Screen
C12	5000			8133	DE-330	SW94Q5	GPXE-33	10C42	Osc. Grid Cap.
C13	5000			BPD-005	DD-502	D5D5	811-005	28C1	Fixed Trimmer
C14	33	500		8133	DE-330	SW94Q5	GPXE-33	10C42	FM Conv. Grid
C15	10			8N7V0			N2200K-10		Fixed Trimmer
C16	10	500		BPD-005	DD-502	D5D5	811-005	28C1	FM Conv. Plate
C17	5000			1468-00005	D6-500	SW94Q5	GPXE-50	1FM-45	RF Coupling
C18	10	500		1468-00001	D6-101	SW5T1	GPXE-100	1FM-31	AFC Filter
C19	100	500		1468-00001	D6-101	SW5T1	GPXE-100	1FM-31	AFC Filter
C20	5000			BPD-005	DD-502	D5D5	811-005	28C1	AFC Filter Fil.
C21	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM 1st. IF Fil.
C22	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM 1st. IF Dec.
C23	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM 1st. IF Screen
C24	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM 1st. IF Fil.
C25	5000			P488-01	DF-503	PTE685	821-01	6TM-81	Diode RF Filter
C26	.01	600		BPD-005	DD-502	D5D5	811-005	28C1	FM 2nd IF Dec.
C27	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM 2nd IF Screen
C28	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM 2nd. IF Cathode
C29	5000			BPD-005	DD-502	D5D5	811-005	28C1	FM 2nd. IF Fil
C30	5000	500		1468-00005	D6-500	SW94Q5	GPXE-50	1FM-45	FM 1st. Limiter Grid
C31	5000			BPD-005	DD-502	D5D5	811-005	28C1	1st. Limiter Screen
C32	5000	400		P488-1	DF-503	PTE685	821-01	6TM-81	AVC Filter
C33	.047	600		P488-047	DF-503	PTE685		6TM-847	AVC Filter
C34	47	500		1468-00005	D6-470	SW94Q5	GPXE-47	1FM-45	2nd. Limiter Screen ‡
C35	5000			BPD-005	DD-502	D5D5	811-005	28C1	2nd. Limiter Plate Dec.
C36	5000	400		P488-1	DF-503	PTE685	821-01	6TM-81	RF Bypass
C37	4	500		1468-00004	D6-400	SW94Q5	GPXE-47	1FM-45	RF Bypass
C38	1000	500		1468-00005	D6-500	SW94Q5	GPXE-50	1FM-45	De-emphasis
C39	1000	500		1468-001	D6-102	1W3D1	GPZL-001	1FM-21	De-emphasis
C40	100	500		BPD-005	DD-502	D5D5	811-005	28C1	Discr. Fil. Bypass
C41	5000			1468-00025	D6-361	SW5T25	GPXE-250	1FM-235	Ant. Coupling
C42	.01	600		P488-01	DF-503	PTE685	821-01	6TM-81	FM RF Amp. Plate Dec.
C43	.01	600		P488-01	DF-503	PTE685	821-01	6TM-81	AM RF Amp. Screen
C44	.047	600		P488-047	DF-503	PTE685		6TM-847	AM RF Amp. Plate Dec.
C45	.01	600		P488-01	DF-503	PTE685	821-01	6TM-81	AVC Filter
C46	.1	500		P488-1	DF-104	PTE4P1		4TM-P1	Osc. Grid Cap.
C47	47	500		1468-00005	D6-470	SW94Q5		1FM-45	

RESISTORS

ITEM No.	RESIST.	WATTS	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	100KΩ	½		Q13-128	AG-51-2	B-41	Volume Control
B	Shaft			Not Req	RE-2	Not Req	Attach to R1A per instructions
R2A	1MEg	½		Q13-137	AG-69-2	B-70	Treble Control
B	Shaft			Not Req	RE-2	Not Req	Attach to R2A per instructions
R3A	100KΩ	½		Q13-128	AG-51-2	B-41	Bass Control
B	Shaft			Not Req	RE-2	Not Req	Attach to R3A per instructions

RESISTORS

ITEM No.	RESISTANCE	WATTS	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R4	56KΩ			B7S-56K	FM Antenna Isolation
R5	470KΩ			B7S-470K	FM Antenna Isolation
R6	470KΩ			B7S-470K	FM RF Amp. Grid
R7	22KΩ			B7S-22K	FM RF Amp. Screen
R8	10KΩ			B7S-10K	FM RF Amp. Cathode
R9	1500Ω			B7S-1500	FM RF Amp. Decoupling
R10	1500Ω			B7S-1500	FM Mixer Cathode
R11	2200Ω			B7S-2200	FM Osc. Decoupling
R12	2200Ω				FM Osc. Plate
R13	5600Ω				FM Osc. Grid Resistor
R14	47Ω				AFC Reactance Screen
R15	12KΩ			B7S-12K	AFC Reactance Grid
R16	68Ω				AFC Reactance Plate
R17	470KΩ			B7S-470K	1st. FM IF Amp. Cathode
R18	2200Ω			B7S-2200	1st. FM IF Amp. Decoupling
R19	2200Ω				2nd. FM IF Amp. Cathode
R20	68Ω				2nd. FM IF Amp. Grid
R21	2200Ω			B7S-2200	2nd. FM IF Amp. Decoupling
R22	2200Ω			B7S-2200	1st. Limiter Grid
R23	56KΩ			B7S-56K	1st. Limiter Screen
R24	10KΩ			B7S-10K	1st. Limiter Plate
R25	27KΩ			B7S-27K	Voltage Divider
R26	27KΩ			B7S-27K	Voltage Divider
R27	100KΩ			B7A-100K	2nd. Limiter Grid
R28	100KΩ			B7A-100K	2nd Limiter Screen
R29	270KΩ			B7S-270K	2nd. Limiter Plate
R30	270KΩ			B7S-270K	Voltage Divider
R31	100KΩ			B7S-100K	Disc. Diode Load
R32	100KΩ			B7S-100K	Disc. Diode Load
R33	100KΩ			B7S-100K	Disc. Diode Load
R34	1MEg			B7S-1MEg	AFC Network
R35	100KΩ			B7S-100K	AVC Network
R36	100KΩ			B7S-100K	AVC Network Cathode
R37	2200Ω			B7S-2200	AM RF Amp. Plate Decoupling
R38	2200Ω			B7S-2200	AM Mixer Cathode
R39	2200Ω			B7S-2200	AM Mixer Plate Decoupling
R40	880Ω			B7S-880	AM Osc. Coil Shunt
R41	22KΩ				AM Osc. Grid
R42	68Ω				AM Osc. Anode
R43	22KΩ	2			AVC Network
R44	18KΩ				
R45	100KΩ			B7S-100K	

SET 132 FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RESISTANCE	WATTS	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R46	330Ω	3		B7S-330	AM I.F Amp. Cathode
R47	2200Ω				AM I.F Amp. Screen See Note
R48	2200Ω			B7S-2200	AM IF Amp. Decoupling
R49	2.2MEg			B7S-2.2Meg	AVC Network
R50	2.2MEg			B7S-2.2Meg	AVC Network
R51	2.2MEg			B7S-2.2Meg	AVC Network
R52	270KΩ			B7S-270K	AM Det Diode Load
R53	270KΩ			B7S-270K	AM Det Diode Load
R54	270KΩ			B7S-270K	Tone Compensation
R55	150KΩ			B7S-150K	AF Amp. Grid
R56	150KΩ			B7S-150K	AF Amp. Cathode
R57	100KΩ			B7S-100K	AF Amp. Plate
R58	150KΩ			B7S-150K	Tone Compensation
R59	100KΩ			B7S-100K	Tone Compensation
R60	4700Ω			B7S-4700	Tone Compensation
R61	15KΩ			B7S-15K	AF Amp. Grid
R62	330Ω			B7S-330	AF Amp. Cathode
R63	22KΩ			B7S-22K	AF Amp. Plate
R64	3300Ω			B7S-3300	Tuning Indicator Cathode
R65	100KΩ			B7S-100K	Filter
R66	100KΩ			B7S-100K	Voltage Divider

Note: Some models use 82KΩ Resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	CHICAGO CONTROLS PART No.
T1	117VAC @ .58A	740VCT @ 275DC Ⓖ	5VDC @ 2A	6.3VAC @ 4.4A		PC-8410 ①		PV-100 ①

① Drill new mounting hole

FILTER CHOKE

ITEM No.	RATINGS: TOTAL CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES: CHICAGO PART No.
L1	.078A	150Ω	5 Henries		C-2303		IR-886 ①
	.078A	150Ω	5 Henries		C-2303		R-888 ①

① Drill new mounting holes

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: BROWNING PART No.	REPLACEMENT DATA: MEISSNER PART No.
L3	FM Ant. Trans.	0Ω	0Ω		
L4	FM RF Coil	0Ω			
L5	FM RF Coil	0Ω			
L6	1st. FM IF	1.4Ω	1.4Ω		
L7	2nd. FM IF	1.4Ω	1.4Ω		
L8	1st. FM IF	1.4Ω	1.4Ω		
L9	Disc. Trans.	1.4Ω	1.4Ω		
L10	AM Ant. Trans	5.5Ω	4Ω		
L11	AM RF Coil	2.5Ω	4Ω		
L12	AM Osc. Coil	2.5Ω	3.7Ω		
L13	1st. AM IF	15Ω	15Ω		
L14	2nd AM IF	16Ω	16Ω		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BROWNING PART No.	NOTES
M1	Bayonet	6-8	.15	Brown		Type #47
M2	Bayonet	6-8	.15	Brown		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	BROWNING PART No.	NOTES
M3	Crystal		IN—54
M4	Switch		Off—On
M5	Switch		Function
M6	Switch		AFC
M7	Switch		Band—Narrow, AM Band Width
M8	FM Tuning Gang		31-40FMMF, 31-40FMXF
M9	AM Tuning Gang		

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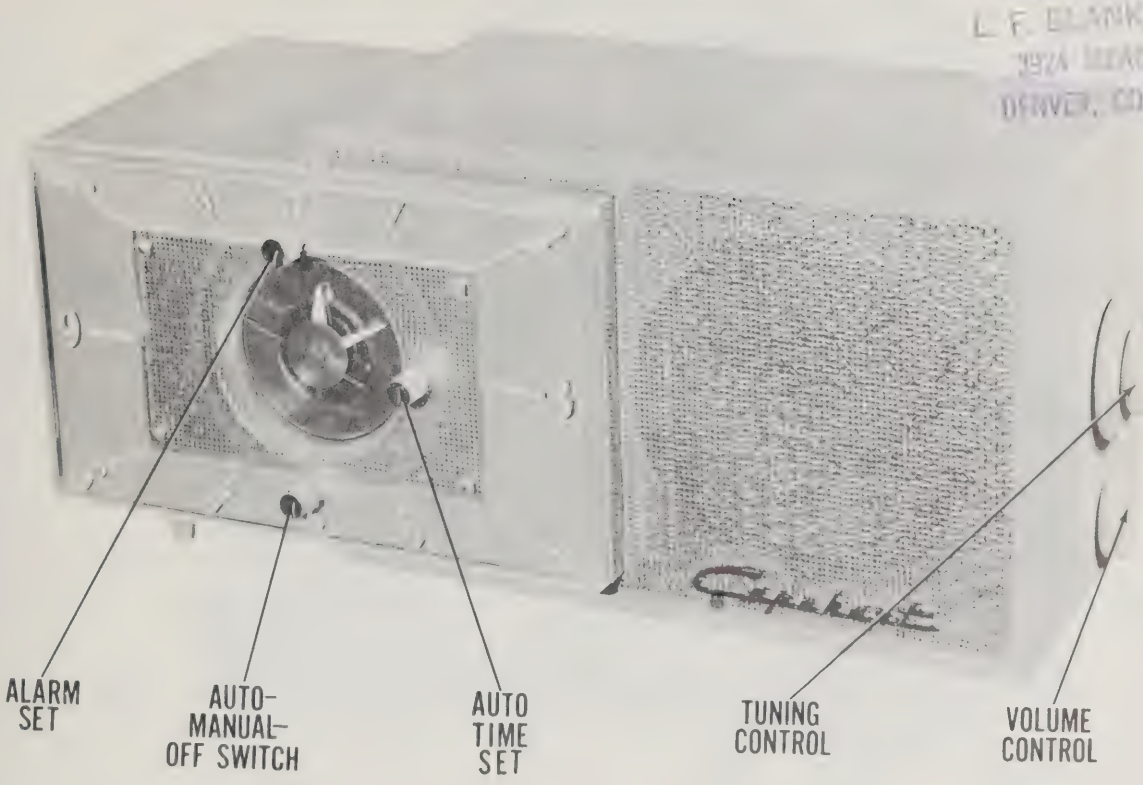
DENVER, COLORADO

CAPEHART
MODEL TC-20 (Ch. C-297)



CAPEHART
MODEL TC-20 (Ch. C-297)

CAPEHART MODEL TC-20

TRADE NAME	Capehart, Model TC-20 (Ch. C-297)
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne, Indiana
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (Grid) of 12BE6 (V1) Low side to B-.	455KC (400~ Mod)	Funing gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.
3.		Loop	537KC	Tuning gang fully closed.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output. Repeat steps 2 & 3 until no further improvement can be made.
4.		Loop	1500KC	Tune for max. output.	"	A7	Adjust for max. output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CAPEHART PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF	12AV6	12AV6	7BT	
V4	Power Output	50C5	50C5	7BZ	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	150	650326A-1	PRS150/50-5		EDL5515		TVA-2453	Filter
B	50	150							Filter
C2	470		2239A-013	SI470	D6-471	5W5T5	GP2K-470	19C15	Ant. Coupling
C3	470		2239A-013	SI470	D6-471	5W5T5	GP2K-470	19C15	RF Coupling
C4	56		2241A-554	SI56	D6-560	5W5Q5	GP1K-56	19C28	Osc. Grid Cap.
C5	.047	200	2246A-4730	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C6	150		2240A-021	SI150	D6-151	5W5T15	GP2K-150	19C12	Diode RF Filter
C7A	220		*452244A-1	SI220	*PC-150	5W5T2	GP2K-220	19C13	Diode RF Filter
B	2000			BPD-002		PTE6D2	801-002	29C2	Audio Coupling
C	250			SI220		5W5T2	GP2K-220	19C13	AF Amp. Plate
D	5000			BPD-005		PTE6D5	811-005	29C1	Audio Coupling
E	250			SI220		5W5T2	GP2K-220	19C13	Output Grid
C8	.01	600	2248A-1030	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Output Plate
C9	.047	600	2244A-4730	P688-047	DF-503	PTE6S5		72P51	Line Isolation
C10	.022	600	2244A-2230	P688-022	DF-303	PTE6S2		6TM-S22	Line Filter

* Items C7A, C7B, C7C, C7D, C7E, R6A, R6B, and R6C are combined into one unit.

CONTROLS

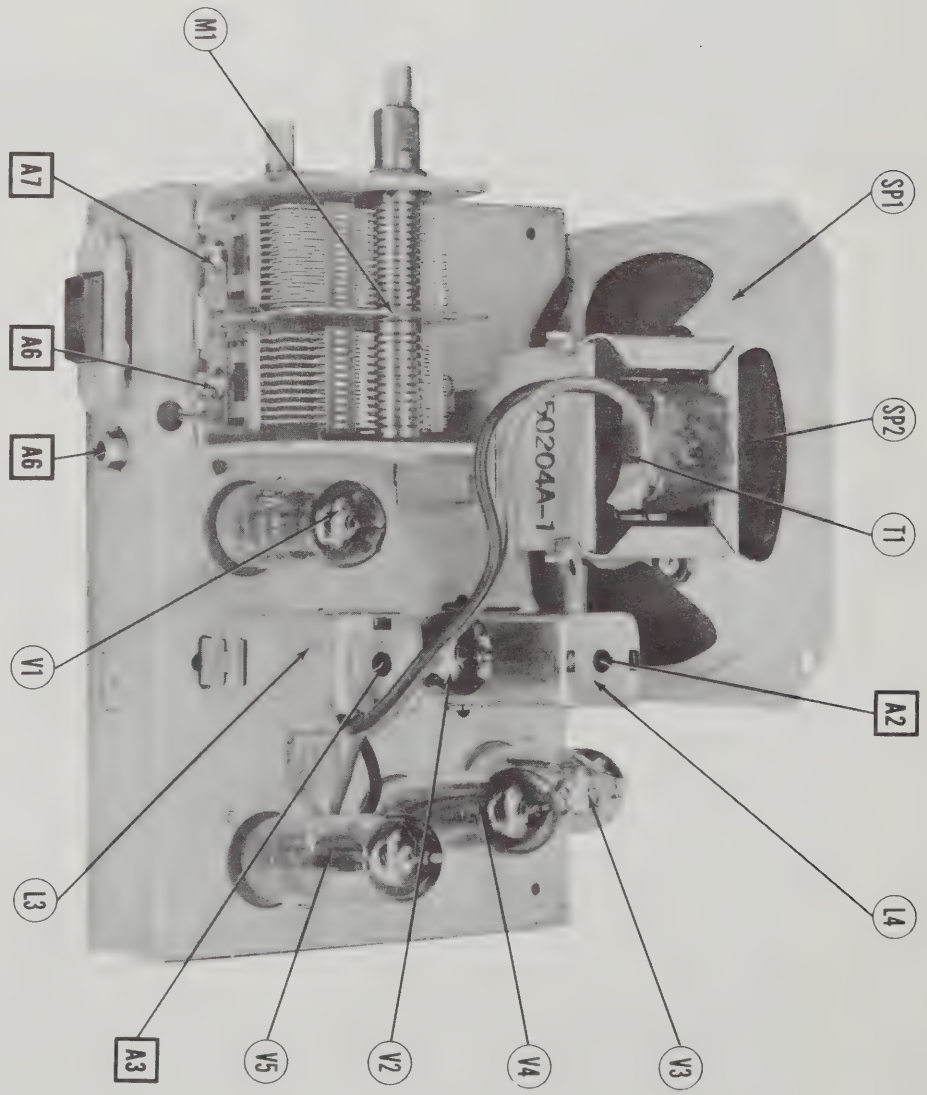
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	452241A-1	Q13-133	AG-60-Z	B-60	Volume Control
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CAPEHART PART No.	IRC PART No.	
R2	22KΩ	½	3229A-223		Osc. Grid
R3	1Meg	½	3229A-105	BTS-1Meg	AVC Network
R4	150Ω	½	3229A-151	BTS-150	IF Amp. Cathode
R5	3.3Meg	½	3229A-335	BTS-3.3Meg	AVC Network
R6A	6.8Meg	½	452244A-1 *	BTS-6.8Meg	AF Amp. Grid
B	470KΩ	½		BTS-470K	AF Amp. Plate
C	470KΩ	½		BTS-470K	Output Grid
R7	150Ω	½	3229A-151	BTS-150	Output Cathode
R8	1500Ω	2		BTB-1500	Filter
R9	220KΩ	½	3229A-224	BTS-220K	Isolation

* Items R6A, R6B, R6C, C7A, C7B, C7C, C7D, and C7E are combined into one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.2KΩ	3.6Ω	220Ω	.52Ω	Part of SP1	A-3876①	A-3025 ①	R0-2 ①	① Bend mounting tabs down file out slots and mount on original brackets.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CAPEHART PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST113		
SP1	PM	3.6Ω	750204A-1	Model P4-X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

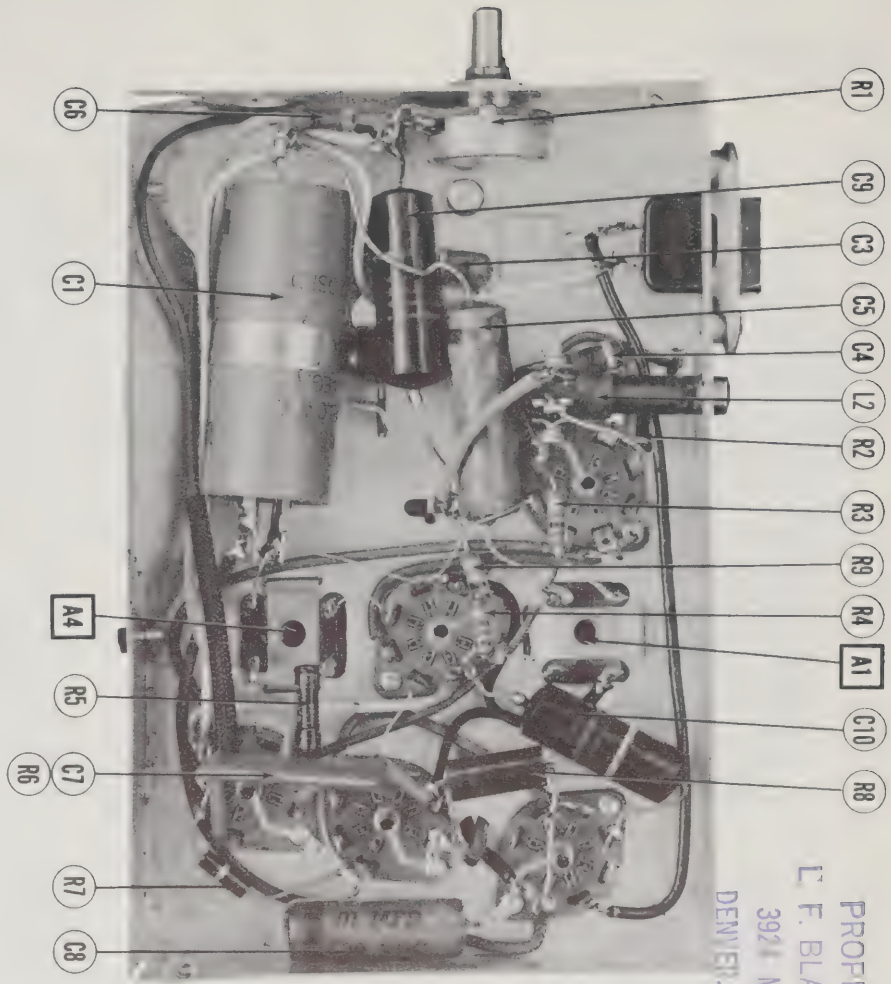
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	
L1	Loop Ant.	.2Ω	3.2Ω	750207A-1		
L2	Osc. Coil	1Ω	11Ω	452242A-1		
L3	1st. IF	16Ω	16Ω	452243A-1		
L4	2nd. IF	16Ω	16Ω	452243A-1		

MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M1	2 Gang Var. Cap.	650327A-1	(29-467MMF, 33-186MMF)
	Cabinet	452234A-G1	
	Knob	650325A-1	Dial
	Knob	452240A-1	Radio
	Knob	452233A-1	Clock
	Clock	750206A-1	

CHASSIS—BOTTOM VIEW



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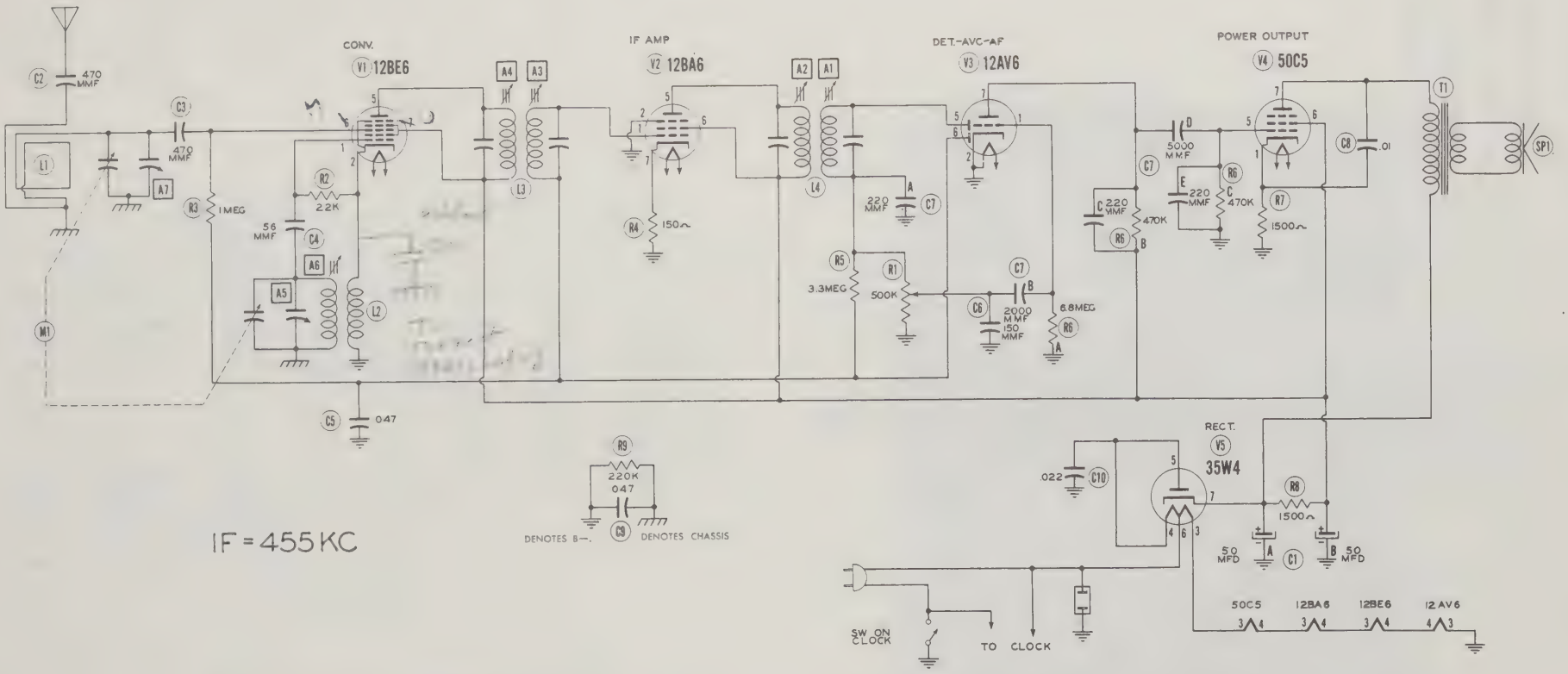
DENVER, COLORADO

CAPEHART MODEL TC-20



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	5-7.1VDC	0V	25VAC	12VAC	85VDC	85VDC	1VDC
V 2	12BA6	-.4VDC	0V	36VAC	25VAC	85VDC	85VDC	1VDC
V 3	12AV6	-.7VDC	0V	0V	12VAC	-.5VDC	-.6VDC	40VDC
V 4	50C5	6.2VDC	0V	85VAC	36VAC	0V	85VDC	105VDC
V 5	35W4	0V	112VDC	85VAC	108VAC	108VAC	117VAC	112VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	25Ω	13Ω	†1.5KΩ	†1.5KΩ	4.8Meg
V 2	12BA6	3.8Meg	0Ω	38Ω	25Ω	†1.5KΩ	†1.5KΩ	150Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	13Ω	500KΩ	3.8Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	90Ω	38Ω	470KΩ	†1.5KΩ	†220Ω
V 5	35W4	Inf.	100KΩ	90Ω	125Ω	125Ω	120Ω	100KΩ

† MEASURED FROM PIN 7 OF V5

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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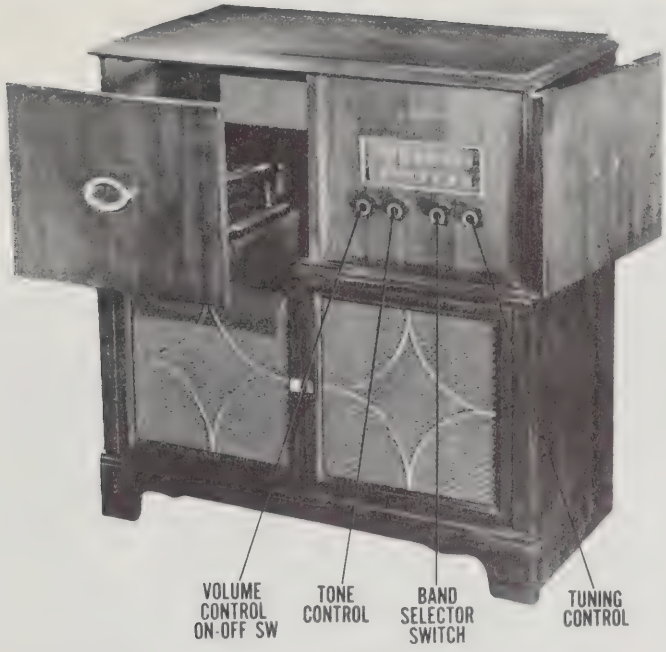
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CAPEHART MODELS 1005B, M, W
(Ch. C-296), 1006B, M, W (Ch. C-287)



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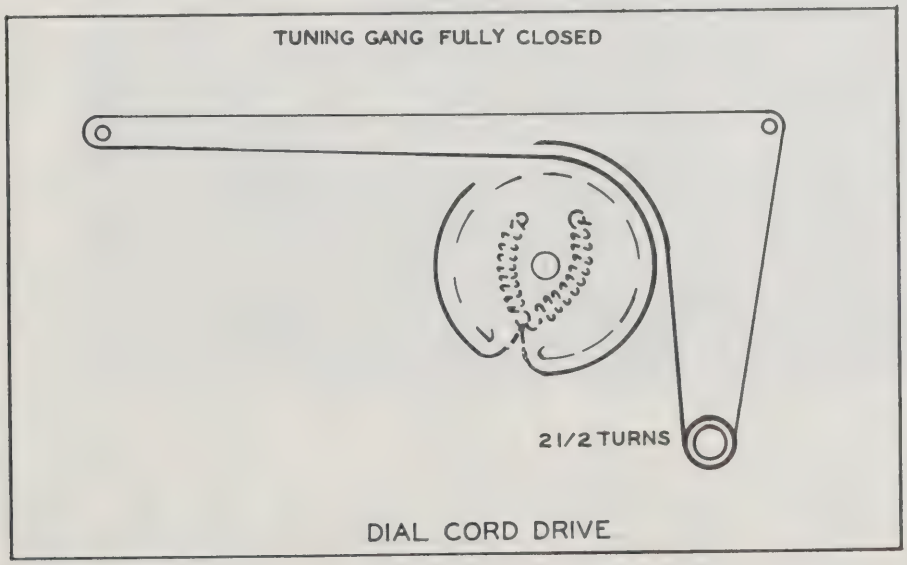
DENVER, COLORADO

CAPEHART MODEL 1006-M

TRADE NAME	Capehart, Models 1005-B, -M, -W (Ch. C-296), 1006-B, -M, -W (Ch. C-287)
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne, Indiana
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop ant.
TUBES (EIGHT)	Types 6BA6 RF Amp. 6J6 Converter, 6BA6 1st. IF Amp., 6BA6 or 6AU6 2nd. FM IF Amp., 6AL5 Ratio Det.-AVC, 6SQ7 Det-AVC Clamp - AF Amp., 6V6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	105-125 Volts AC — RATING .45 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE CAPEHART MODEL 333A SIMILAR TO V-M MODEL 950 IN PHOTOFACT SET 107 FOLDER 13 OR RECORD CHANGER MANUAL CM-3.



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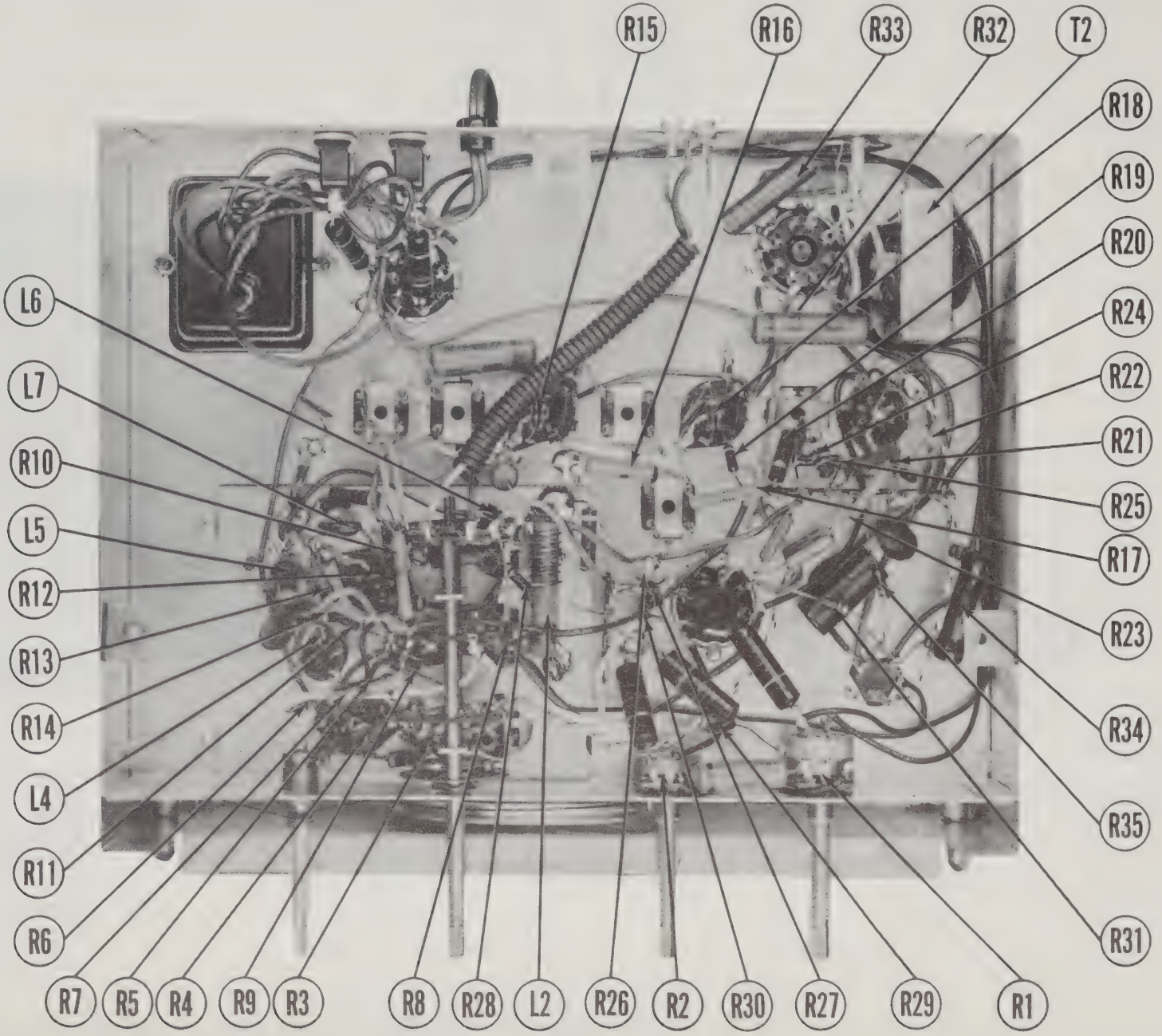
R15
R16
R33
R32
T2
R18
R19
R20
R24
R22
R21
R25
R17
R23
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R31
L6
L7
R10
L5
R12
R13
R14
L4
R11
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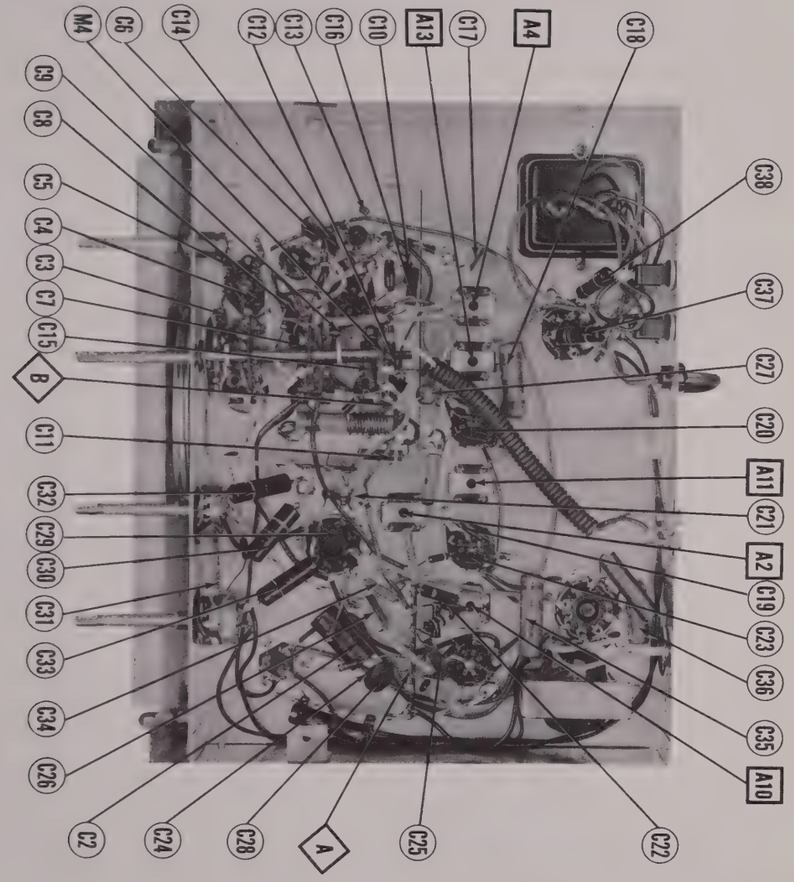
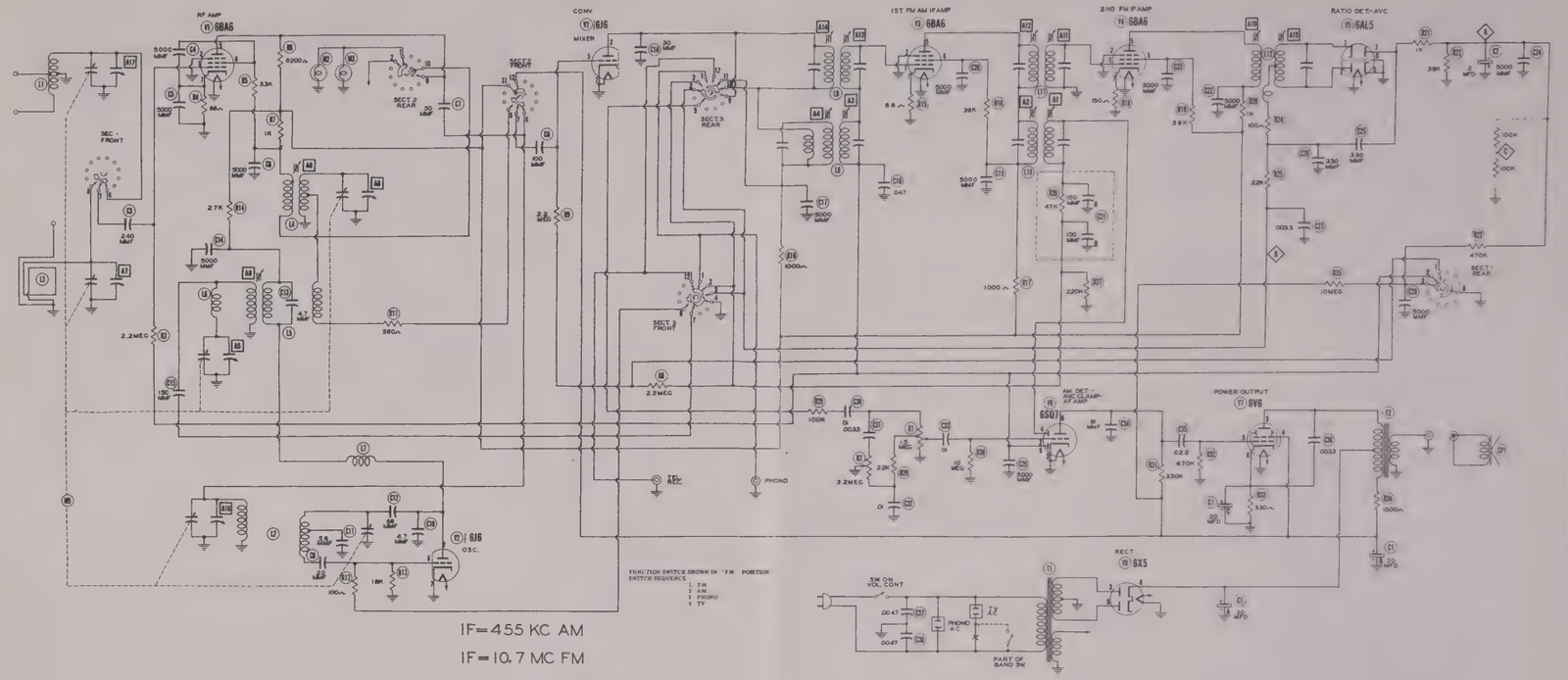
R30
R27
R29
R1





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	1- .2VDC A- .1VDC	0V	0V	6.3VAC	115VDC A 90VDC	80VDC A 75VDC	.6VDC	
V 2	6J6	1 .2VDC A 80VDC	155VDC	0V	6.3VAC	1 1.3VDC A 1.1VDC	1 .2VDC A 85VDC	0V	
V 3	6BA6	1 0V A .1VDC	0V	0V	6.3VAC	155VDC	1 .2VDC A 75VDC	.6VDC	
V 4	6BA6	0V	0V	0V	6.3VAC	155VDC	135VDC	1 .2VDC A 1.1 VDC	
V 5	6AL5	1- .2VDC A- .1VDC	1- .2VDC A- .1VDC	6.3VAC	0V	0V	0V A- .1VDC		
V 6	6SQ7	0V	- .4VDC	0V	1- .2VDC A- .1VDC	1- .2VDC A- .1VDC	180VDC A 115VDC	6.3VAC	0V
V 7	6V6GT	0V	0V	320VDC	285VDC	0V	310VDC A 295VDC	6.3VAC	8.1VDC
V 8	6X5GT	0V	8.3VAC	315VAC	0V	315VAC	0V	0V	335VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	33 .15Meg +6.45Meg	0Ω	0Ω	1Ω	510KΩ ±12.5KΩ	134KΩ	66Ω	
V 2	6J6	270KΩ ±5%Ω‡	93.5KΩ	0Ω	1Ω	4.5Meg	185KΩ	0Ω	
V 3	6BA6	43.4Meg	0Ω	0Ω	1Ω	93.5KΩ	160KΩ	66Ω	
V 4	6BA6	1Ω	0Ω	0Ω	1Ω	93.5KΩ	160KΩ	150Ω	
V 5	6AL5	1 Ref +330Ω‡	1 Inf +330Ω‡	1Ω	0Ω	0Ω	0Ω	0Ω	66KΩ
V 6	6SQ7	0Ω	10Meg	1MΩ	1Ω	470KΩ ±270KΩ	470KΩ ±1.5Meg	1330KΩ	1Ω	0Ω
V 7	6V6GT	0Ω	0Ω	11400Ω	11.5KΩ	470KΩ	1330KΩ	1Ω	330Ω
V 8	6X5GT	Inf.	1Ω	150Ω	Inf.	135Ω	Inf.	0Ω	100KΩ

FUNCTION SWITCH IN AM OR FM POSITION
† TAKEN IN FM
* TAKEN IN AM

† MEASURED FROM PIN 6 OF V6

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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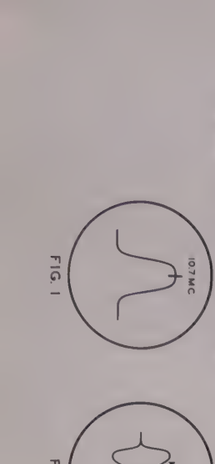

FIG. 1

FIG. 2

| | | |

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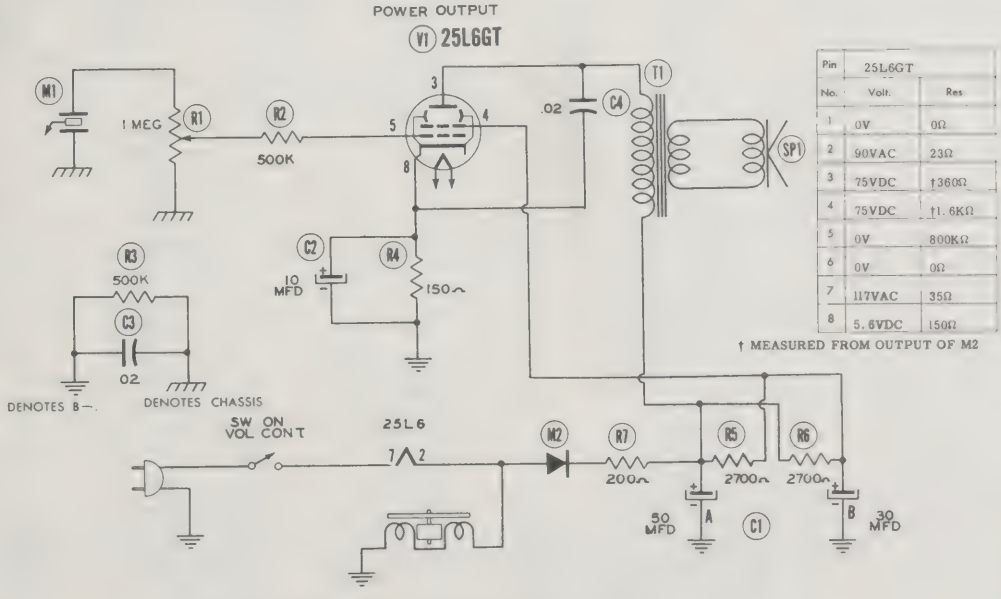
3924 MEADE ST.
DENVER, COLORADO

FIRESTONE
MODEL 4-A-88

FIRESTONE
MODEL 4-A-88

FIRESTONE MODEL 4-A-88

TRADE NAME	Firestone, Model 4-A-88 (Code 327-0-4A88)
SUPPLIER	Firestone Tire And Rubber Co., Akron, Ohio
TYPE SET	AC Operated Phono Player With One Tube Amplifier
TUBES (ONE)	Type 25L6GT Power Output
POWER SUPPLY	110-120 Volts AC
RATING	.33 Amp. @ 117 Volts AC



Pin No.	25L6GT Volt.	Res
1	0V	0Ω
2	90VAC	23Ω
3	75VDC	†360Ω
4	75VDC	†1.6KΩ
5	0V	800KΩ
6	0V	0Ω
7	117VAC	35Ω
8	5.6VDC	150Ω

† MEASURED FROM OUTPUT OF M2

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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132-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Power Output	25L6GT	25L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	CE-530-5	PRS150/50-30		EDL5315		TVA-2450	Filter Red
B	30	150							Filter Yellow
C2	10	50	CE-425-0	PRS50/10		BR105		TVA-1304	Output Cathode
C3	.02	400	CP-105-2	P488-02	DF-203	PTE4S2		4TM-S2	Phono Isolation
C4	.02	400	CP-103-5	P488-02	DF-203	PTE4S2		4TM-S2	Output Plate

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Firestone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½		Q13-137	AM-63-Z	BSK-60-S	Volume Control - See Note 1
B	Shaft			Not req.	KSS-3	Not req.	Attach to R1A Per Instructions
C	Switch			76-1	SW-A	Not req.	Attach to R1A Per Instructions

Note 1. Some Models May Use 500KΩ Control In This Application.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	390KΩ	½		BTS-390K	Output Grid - See Note 2
R3	390KΩ	½		BTS-390K	Output Grid - See Note 2
R4	150Ω	½	RC-150-5	BW-½-150	Output Cathode - Wire Wound
R5	2700Ω	½		BTS-2700	Output Screen - See Note 3
R6	2700Ω	½		BTS-2700	Output Screen - See Note 3
R7	200Ω	1			Surge Limiter

Note 2. Some models use 500KΩ resistor in this application.
Note 3. Some models use single 1800Ω resistor in place of R5 and R6.

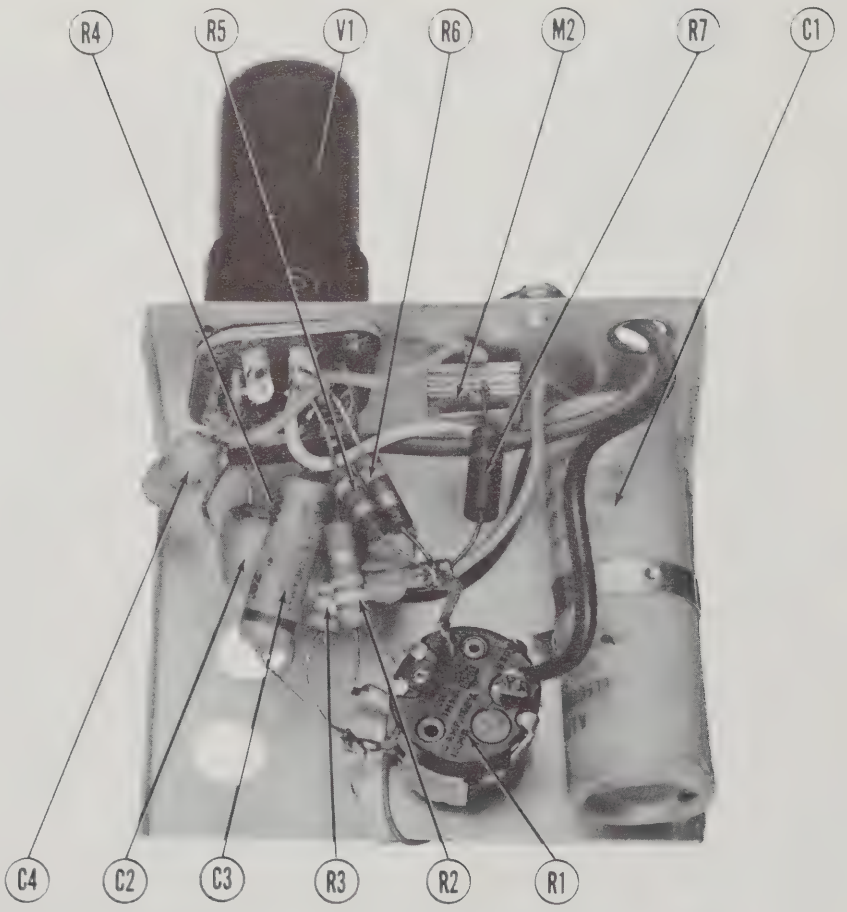
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.85KΩ	3.5Ω	162Ω	.4Ω		A-3332 ①	A-3025 ①	R0-2 ①	① File out slots, bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA: FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD RES. / V.C. IMP.				
SP1	PM / 3.5Ω	SP-400	ST-113 Mod. P4-X	4A1	
	CONE DIA. / V.C. DIA.				
SP2	4" / 9/16"				

CHASSIS VIEW



PHONO CARTRIDGE and NEEDLE

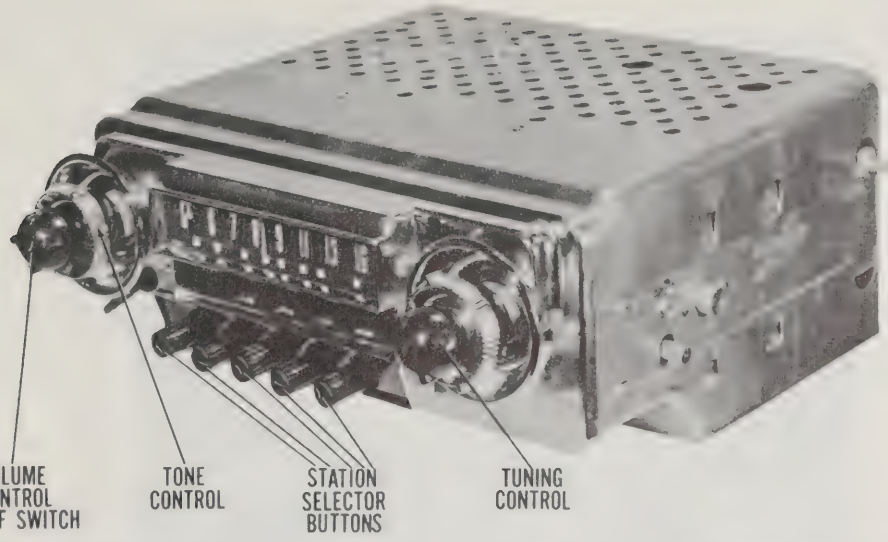
ITEM No.	REPLACEMENT DATA: FIRESTONE PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M1	TL-9233	L-92-33 507-L-92-B†	Optional	W53MG	A64MG	H-60 25H60 †	Optional	† Complete Tone Arm

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: FIRESTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M2	.035A	SL650	NB-5	8J1	

FORD
MODEL M-2 (1A-18805-A1)



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TRADE NAME	Ford, Model M-2 (1A-18805-1A)
SUPPLIER	Ford Motor Car Co., Detroit, Michigan
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES(SIX)	Types 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1606 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cores fully in and set the pointer 1/4 in. to the left of the 550 calibration. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	fig. 1	High side thru dummy to ant. receptacle. Low side to chassis.	265MC (400∿ Mod)	Tuning cores fully out.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	fig. 1	"	1606KC	"	"	A5, A6, A7	"

The following RF Alignment should be subsituted for step 2 if one of the RF Coils, or tuning cores, has been replaced.

Turn the tuning cores fully out and adjust the cores so they enter the coil form but not the coil itself.

3.	fig. 1	High side thru dummy to ant. receptacle. Low side to chassis.	1606KC	Tuning cores fully out.	Across voice coil.	A5, A6, A7	Adjust for max. output.
4.	"	"	1300KC	1300KC	"	A8, A9 A10	Adjust cores for maximum output. Repeat steps 3 & 4 until no further improvement can be made. DO NOT ADJUST CORES AT 1606 KC.

After set is installed, fully extend antenna and tune in a weak station near 1400KC. Adjust A7 for maximum volume.

PUSHBUTTON ADJUSTMENTS

Since the pushbuttons are mechanical, any pushbutton may be adjusted to any station within the receivers range. Carefully tune in the desired station manually. Turn the pushbutton approximately one turn counter-clockwise. Press the button all the way in and then release it. Tighten the pushbutton by turning the button clockwise. Repeat this procedure for each pushbutton.

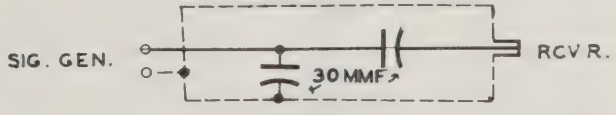

FIG. 1

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PARTS LIST AND DESCRIPTIONS

FORD MODEL M-2

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6SK7GT	6SK7GT	8N	
V2	Converter	6SA7GT	6SA7GT	8AD	
V3	IF Amplifier	6SK7GT	6SK7GT	8N	
V4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350		E3C305		UP2135C		TVL-3634	■ Filter
B	10	300							▲ Filter
C	20	25							Output Cathode
C2	100	500		1469-0001	D6-101	5W5T1	GP1K-100	19C11	Fixed Trimmer
C3	68	500		SI68	D6-680	5W5Q7	GP1K-68	19C10	RF Coupling
C4	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Decoupling
C6	1.9								RF Coupling
C7	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Grid Cap.
C8	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Bias Filter
C9	.01	200		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C10	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C11	.003	600		P688-003	D6-302	PTE6D3	GP2M-003	6TM-D3	Tone Comp.
C12	.02	200		P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C13	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Output Plate
C14	.004	1600		P1688-004		PTE16D4		MB-D4	Buffer
C15	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Filament Bypass
C16	.5	100		P185-5				68P20	Hash Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
				Concentrikit			
R1A	1Meg	½		B11-137 *			Tone Control - Front
B	250KΩ	½		B18-130X *			Volume Control & SW-Tapped @ 75KΩ - rear
C	Shaft end			E-190 *			Attach per instruction in CONCENTRIKIT
D	Switch			76-1 *			Attach per instruction in CONCENTRIKIT
E	Bushing			S-5 *			Attach to R1
R2	125Ω	1					Sensitivity Control - Wire Wound -See Note

* Additional parts to be used with Concentrikit

Note Some models use control with minimum resistance of 24Ω

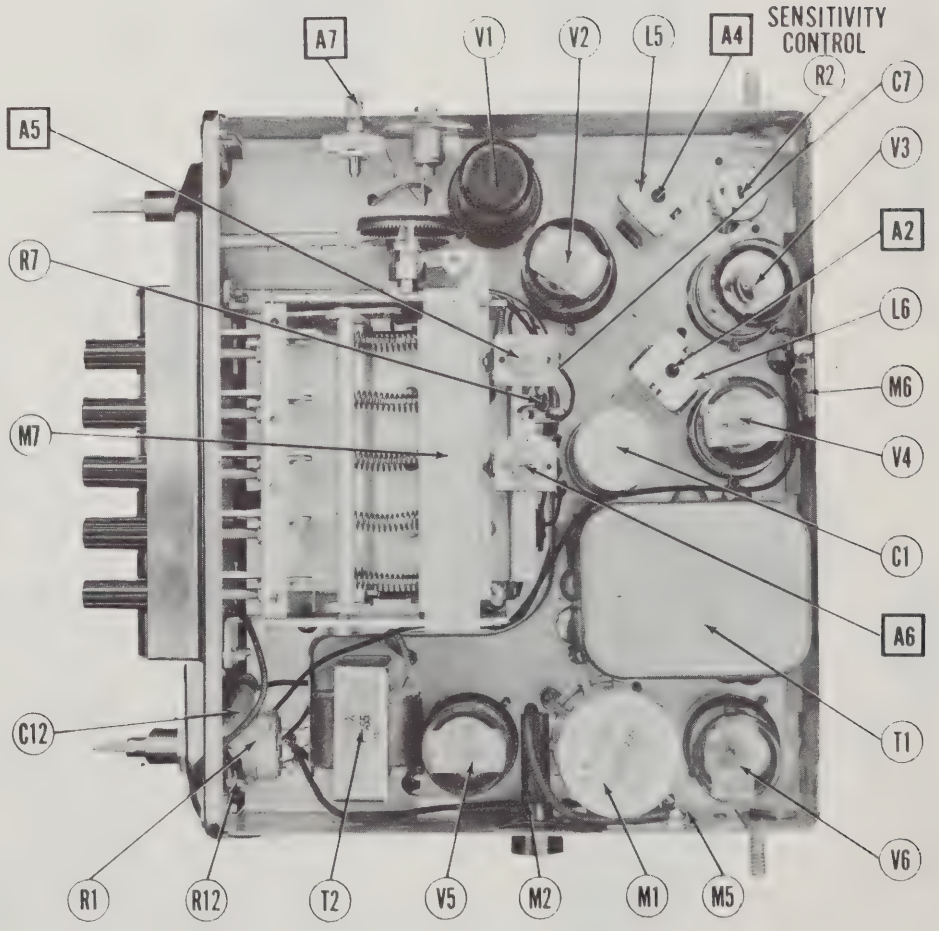
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	IDENTIFICATION CODES
R3	1Meg	½			RF Amp. Grid
R4	10KΩ	1			RF Amp. Plate
R5	56KΩ	2			RF Coil Shunt
R6	100Ω	½			Parasitic Suppressor
R7	47KΩ	½			Osc. Grid
R8	2.7Meg	½			IF Amp. Grid - See Note 1
R9	18KΩ	2			Screen Loading
R10	39KΩ	½		BTS-39K	Diode Filter - See Note 2
R11	2.7Meg	½		BTS-2.7Meg	AVC Network - See Note 1
R12	12KΩ	½		BTS-12K	Tone Compensation
R13	10Meg	½		BTS-10Meg	AF Amp. Grid
R14	1.5Meg	½		BTS-1.5Meg	AF Amp. Plate
R15	220KΩ	½		BTS-220K	Output Grid
R16	270Ω	1		BTA-270	Output Cathode
R17	1000Ω	1		BTA-1000	Filter
R18	82Ω	½		BTS-82	Hash Suppressor
R19	82Ω	½		BTS-82	Hash Suppressor

Note 1 Some models use 2.2Meg Resistor in this application

Note 2 Some models use 47KΩ Resistor in this application

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 3 Amp	500VCT .048ADC				P-6476 ②		

② Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6KΩ	3.2Ω	630Ω	.7Ω		A-3850 ①			① Bend mounting tabs down, file out slot & mount in original holes on chassis.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BENDIX PART No.	VIKING PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.2Ω		69J9	69A2	
	CONE DIA.	V. C. DIA.				
SP2	6"X9"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	BENDIX PART No.	MEISSNER PART No.
L1	Ant. Coil	11Ω			
L2	RF Choke	26Ω			
L3	RF Coil	11Ω			
l4	Osc. Coil	1.5Ω	3.7Ω		
L5	1st. IF	30Ω	30Ω		
L6	2nd. IF	30Ω	30Ω		
L7	Hash Choke	0Ω			
L8	Fil. Choke	0Ω			
L9	Fil. Choke	0Ω			

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				INSTALLATION NOTES
				BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT	6.3	115v		A100	5301	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			BENDIX PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	9Amp.			307009	155009A	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BENDIX PART No.		
M3	Bayonet	6-8	.4	White			Type #55
M4	Bayonet	6-8	.4	White			Type #55

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M5	Spark Plate		
M6	Spark Plate		
M7	Tuning Unit		

SET 132

FOLDER 7

FORD MODEL M-2

CHASSIS—BOTTOM VIEW

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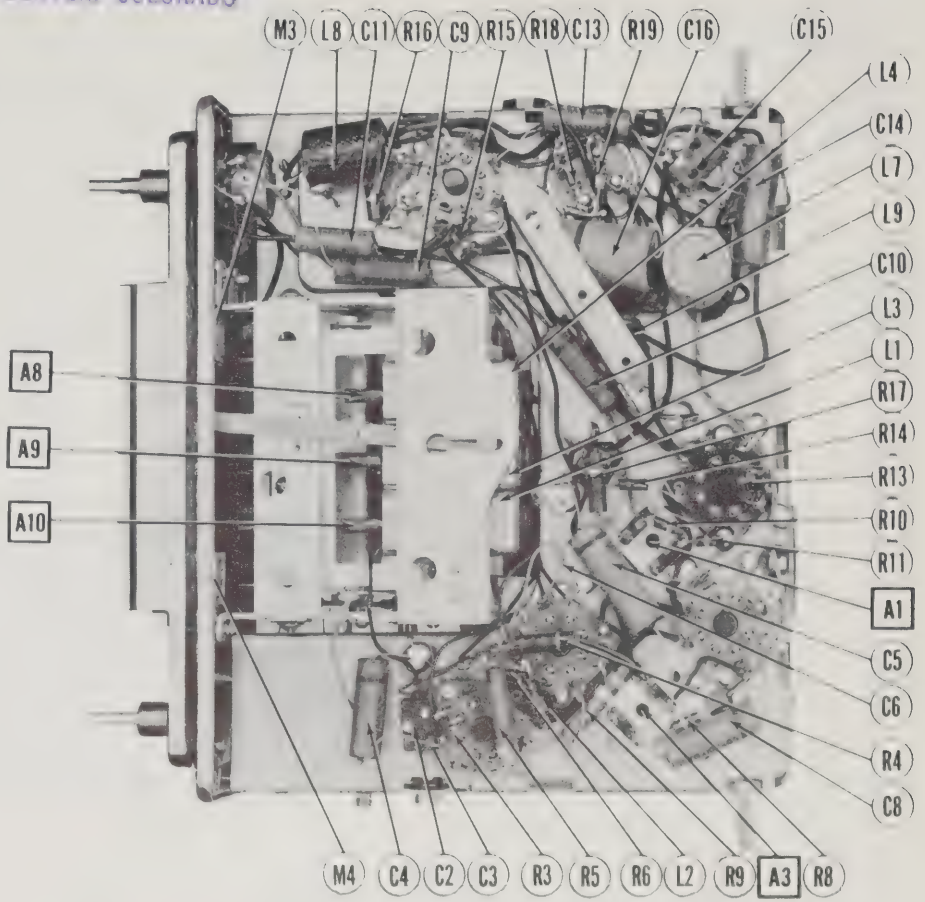
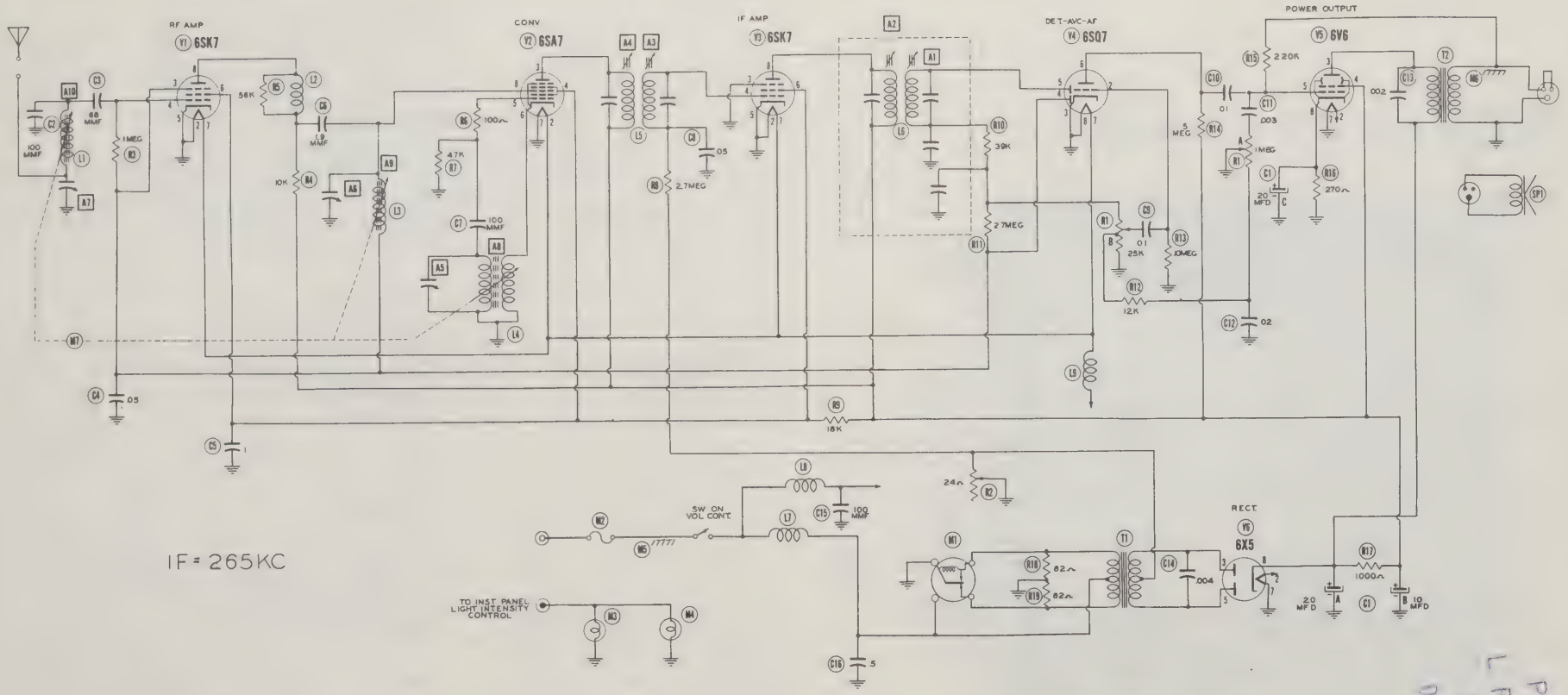


FORD MODEL M-2



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0V	0V	-.3VDC	-.6VDC	0V	70VDC	6.3VDC	135VDC
V 2	6SA7GT	0V	6.3VDC	215VDC	70VDC	1-10.6VDC	0V	0V	-.3VDC
V 3	6SK7GT	0V	0V	0V	-.4VDC -.6VDC	0V	70VDC	6.3VDC	215VDC
V 4	6SQ7GT	0V	-.7VDC	0V	-.2VDC	-.2VDC	55VDC	6.3VDC	0V
V 5	6V6GT	0V	6.3VAC	210VDC	215VDC	0V	0V	0V	12VDC
V 6	6X5GT	0V	6.3VDC	275VAC	0V	275VAC	6.3VDC	0V	235VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7GT	0Ω	0Ω	2.9Meg	3.9Meg	0Ω	†190KΩ	.5Ω	†1MΩ
V 2	6SA7GT	0Ω	.5Ω	†1MΩ	†190KΩ	47KΩ	1.5Ω	0Ω	2.9Meg
V 3	6SK7GT	0Ω	0Ω	0Ω	2.7Meg	0Ω	†190KΩ	.5Ω	†1MΩ
V 4	6SQ7GT	0Ω	10Meg	0Ω	2.9Meg	290KΩ	†1.5Meg	.5Ω	0Ω
V 5	6V6GT	0Ω	.5Ω	†630Ω	†1MΩ	220KΩ	.7Ω	0Ω	270Ω
V 6	6X5GT	0Ω	.5Ω	380Ω 165Ω	∞ Inf.	380Ω 165Ω	.7Ω	0Ω	50KΩ

† MEASURED FROM PIN 8 OF V6

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132-7

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 Volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

JACKSON MODELS 10C, T, 12C, T, 14C, T, 16C, T, 312, 316, 412, 416

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MODEL 12T

JACKSON MODELS 10C, T, 12C, T, 14C, T, 16C, T, 312, 316, 412, 416

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DATE 5-51 SET 132 FOLDER 8

JACKSON MODELS 10C, T, 12C, T, 14C, T, 16C, T, 312, 316, 412, 416

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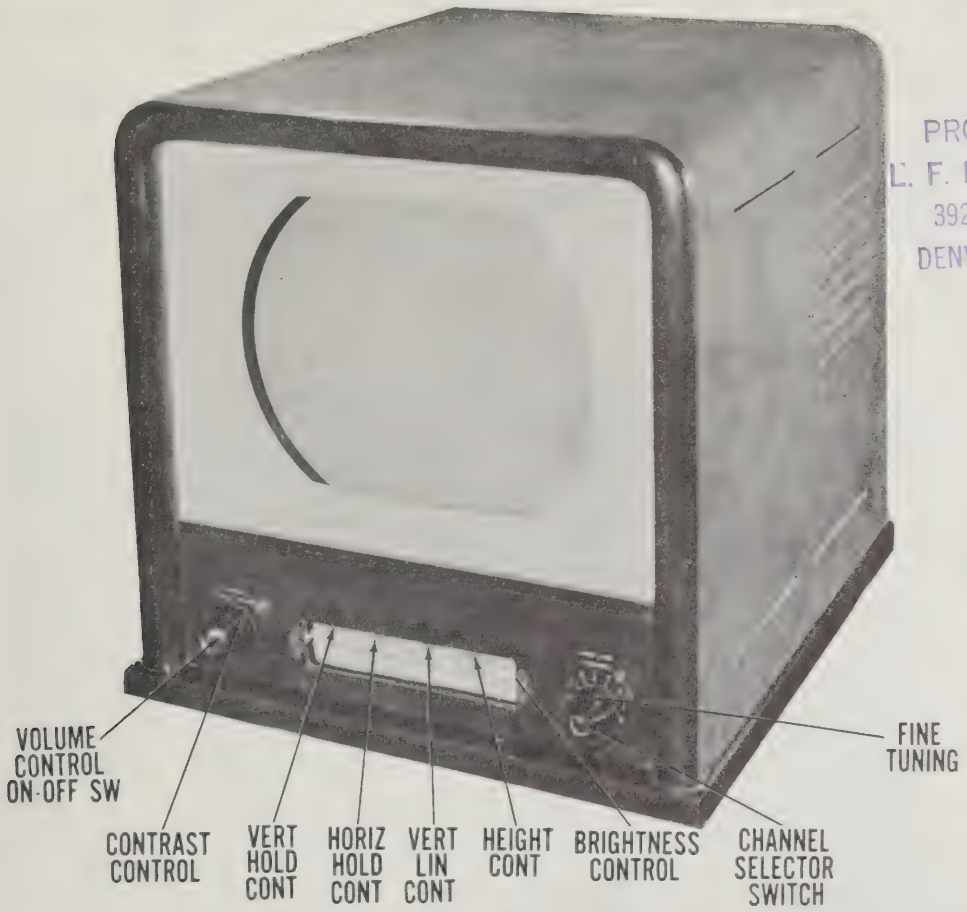

JACKSON MODEL 12T

TRADE NAME	Jackson, Models 10C, T, 12C, T, 14C, T, 16C, T, 312, 316, 412, 416
MANUFACTURER	Jackson Ind. Inc., 59 East Cullerton St., Chicago, Illinois
TYPE SET	Television Receiver (Some Models TV-Radio-Phono Combination)
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC
RATING	1.8 Amp. @ 117 Volts AC
TUNING RANGE–	Channels 2 thru 13

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FOR SERVICE INFORMATION ON RADIO CHASSIS SEE PHOTOFACT SET #130 - FOLDER #8 FOR AM "ONLY" CHASSIS OR PHOTOFACT SET # 131 FOLDER #9 FOR AM-FM CHASSIS.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT FOR MODEL 312 - SEE PHOTOFACT SET #102 - FOLDER #16 OR RECORD CHANGER MANUAL CM-3 ; FOR MODEL 416 - SEE PHOTOFACT SET #107 FOLDER #13 OR RECORD CHANGER MANUAL CM-3.

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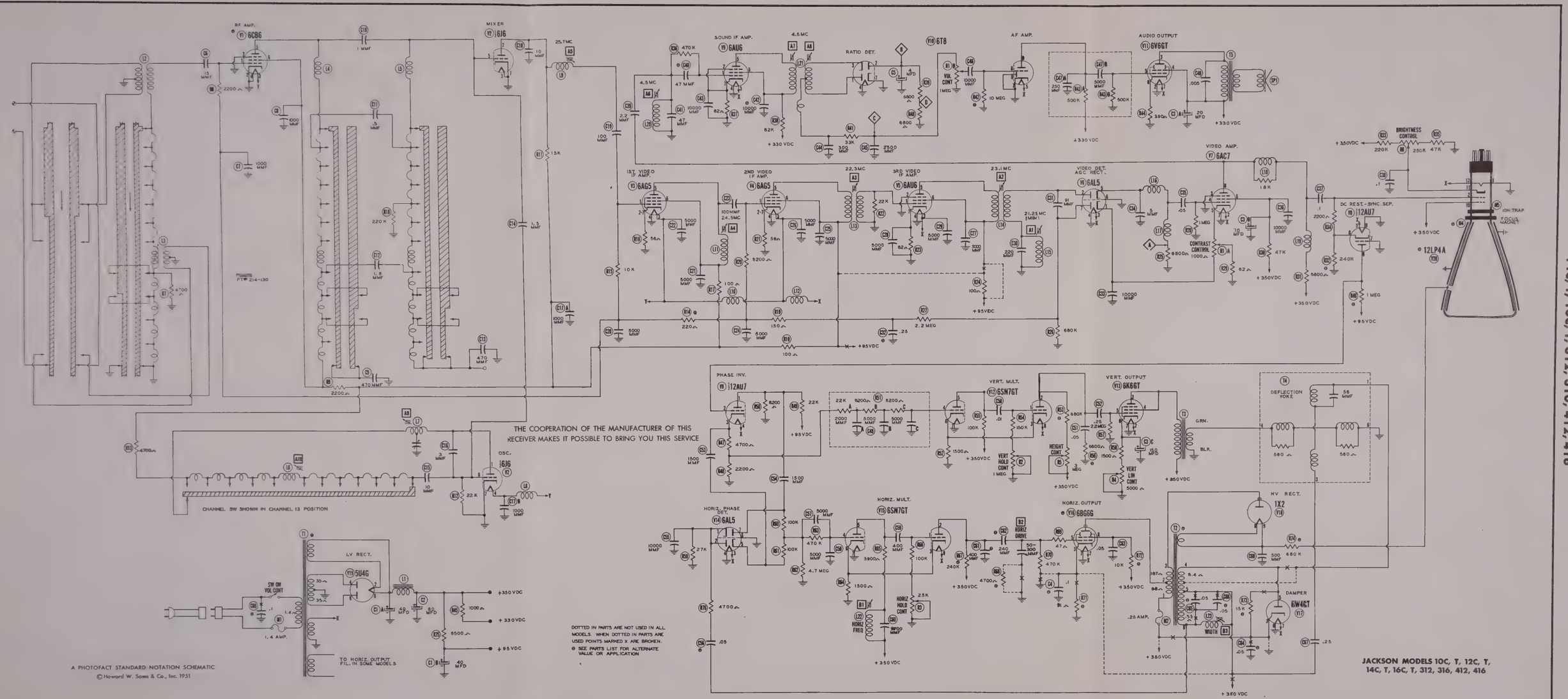
JACKSON MODELS 10C, T, 12C, T, 14C, T, 16C, T, 312, 316, 412, 416



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DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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JACKSON MODELS 10C, T, 12C, T, 14C, T, 16C, T, 312, 316, 412, 416

JACKSON MODELS 10C, T, 12C, T, 14C, T, 16C, T, 312, 316, 412, 416

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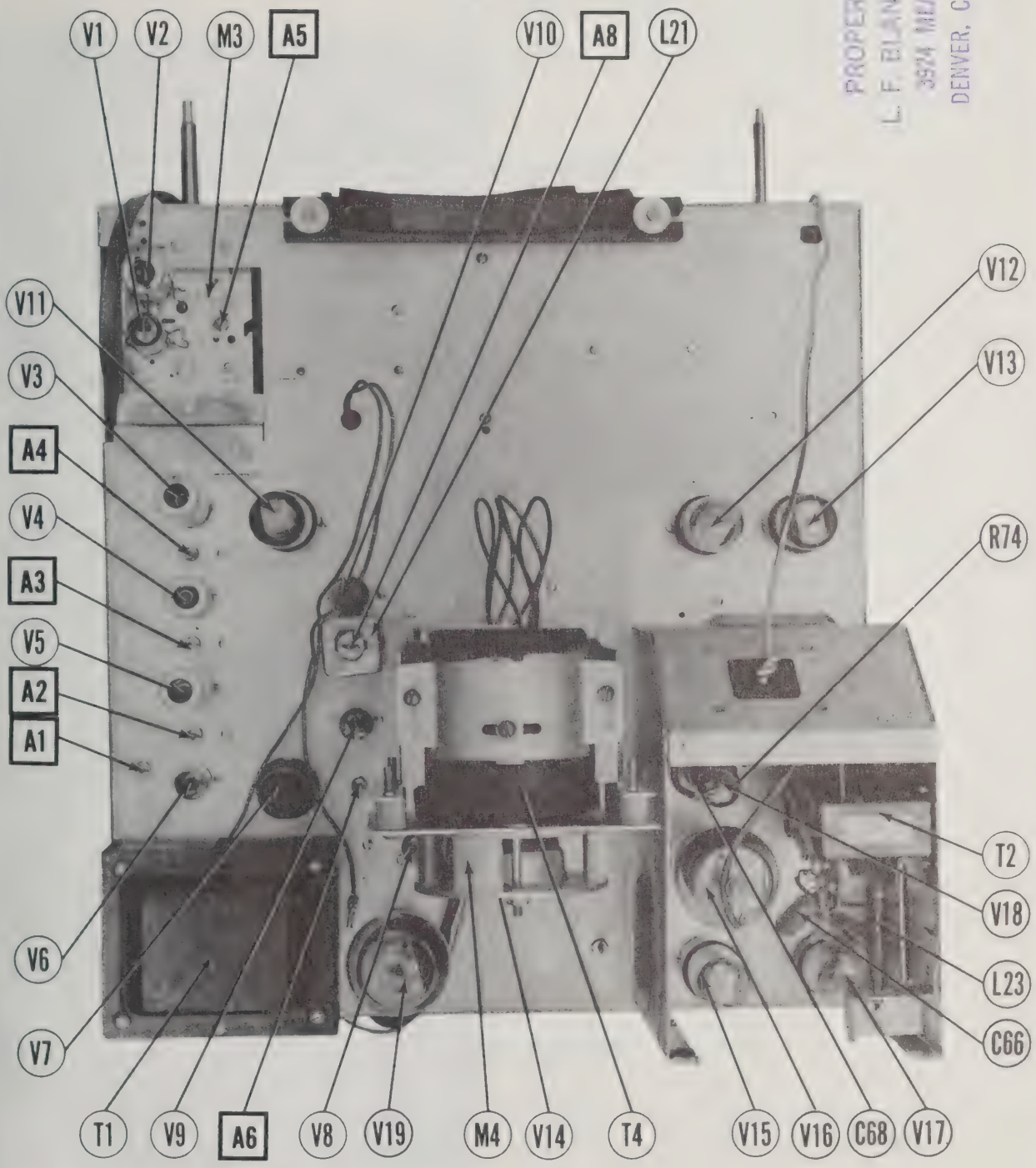
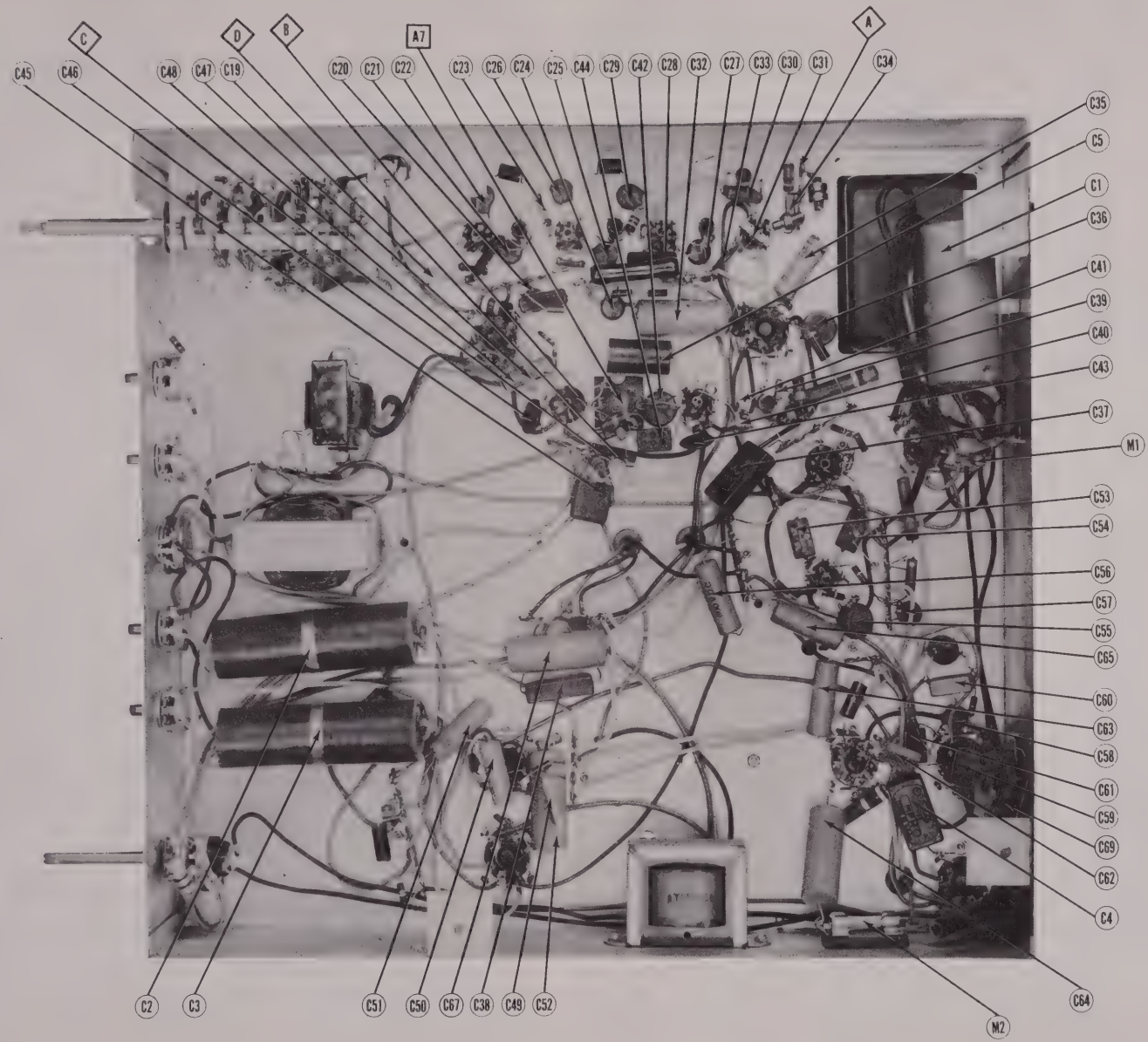
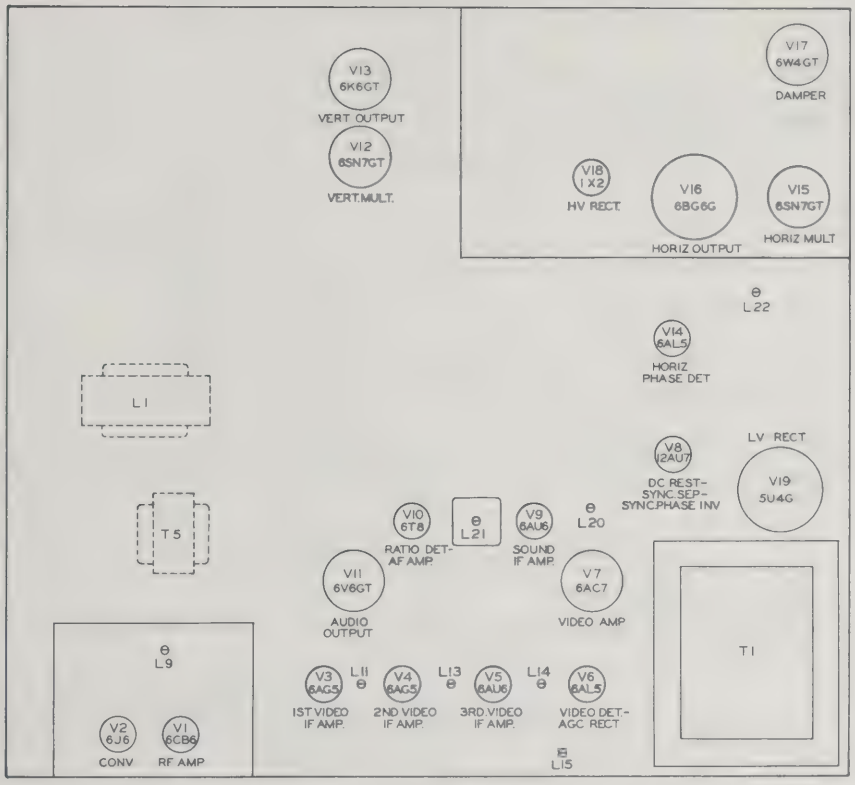
3524 MEADE ST.
DENVER, COLORADO



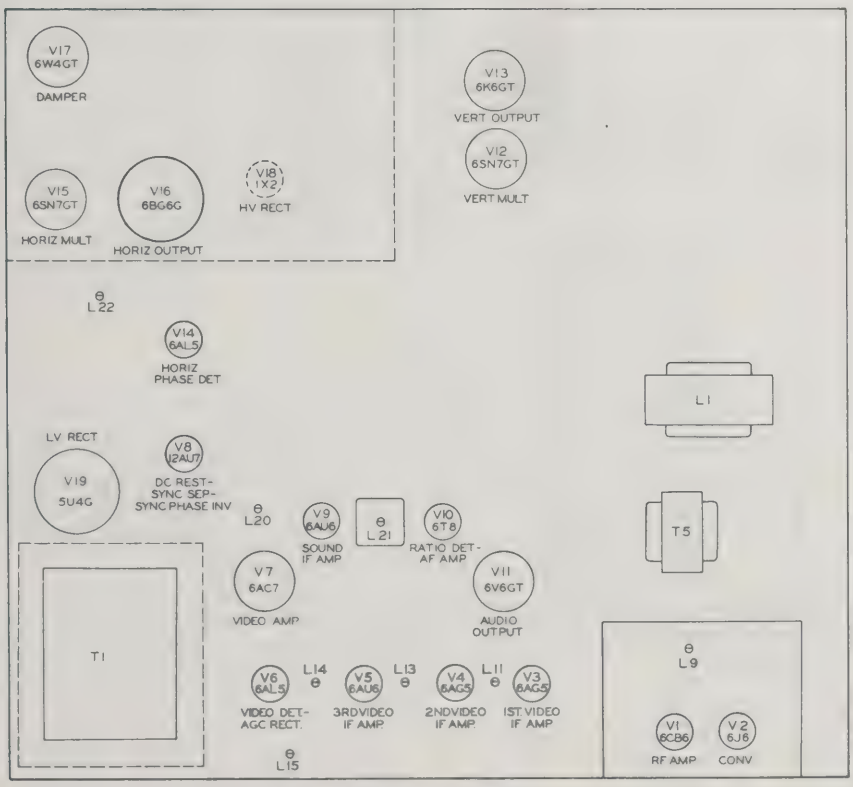
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

PROPERTY OF
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DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V15) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.25MC (Unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	23.1MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	22.3MC	"	"	A3	"
4.	"	"	24.5MC	"	"	A4	"
5.	"	"	25.7MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.25MC 25.75MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A2 thru A5 for proper response. If A2 is changed recheck A1.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.005MFD	High side to pin 4 (grid) of 6AC7 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side to the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use fequency modulated signal with 60% modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.005MFD	High side to pin 4 (grid) of 6AC7 (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C5. Adjust for maximum amplitude and symmetry as per figure 2.
8.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A8	Reconnect capacitor C5. Adjust A8 so 4.5MC occurs at center of crossover lines. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT (TUNER #214-130)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A9	Adjust to place video marker at 50% as per figure 4.
10.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see that the video marker can be properly placed well within the range of the fine tuning control. If not compromise adjustment of A9 may be required.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
11.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A10	Adjust to place video marker at 50% as per figure 4.
12.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see that the video marker can be properly placed well within the range of the fine tuning control. If not compromise adjustment of A10 may be required.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PRE-SET AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION IN THE FIELD SHOULD NOT BE REQUIRED.

FIG. 1

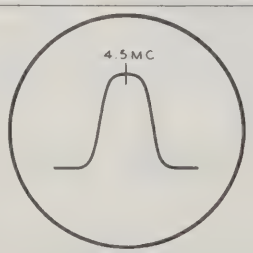

FIG. 2

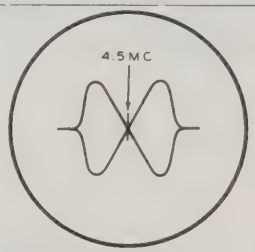

FIG. 3

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3924 MEADE ST.
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT (TUNER #214-113)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Set the fine tuning control to the mid-position of its range.
Complete oscillator alignment may not be required. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A-11. It should be noted that this is an all channel oscillator circuit adjustment, and should not be adjusted for any individual channels. If adjustment of A-11 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment screw for each channel that is off frequency. The individual channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection .

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A12	Adjust to place video marker at 50% as shown in figure 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A13	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A14	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A15	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A16	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A17	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A18	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A19	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A20	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A21	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A22	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A23	

RF ALIGNMENT (TUNER #214-113)

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. to Point (E). Low side to chassis.	A24, A25, A26	Adjust for response curve similar to figure 5 with markers above 90%.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 5. If markers fall below 70% on any channels, make slight adjustments of A24, A25 and A26 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

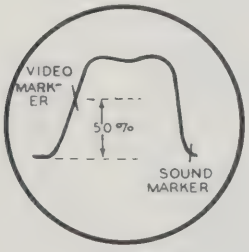

FIG.4

FIG.5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.4VDC	0V	6.3VAC	0V	80VDC	80VDC	0V		
V 2	6J6	60VDC	65VDC	0V	6.1VAC	-1.4VDC	§-2VDC	0V		
V 3	6AG5	-.4VDC	.3VDC	6.3VAC	0V	95VDC	95VDC	.3VDC		
V 4	6AG5	-.4VDC	.3VDC	6.3VAC	0V	95VDC	95VDC	.3VDC		
V 5	6AU6	0V	0V	6.3VAC	0V	95VDC	95VDC	.8VDC		
V 6	6AL5	.5VDC	0V	6.3VAC	0V	.3VDC	0V	-.2VDC		
V 7	6AC7	0V	6.3VAC	0V	0V	6.2VDC	285VDC	0V	320VDC	
V 8	12AU7	22VDC	9.6VDC	10.3VDC	6.3VAC	6.3VAC	9.6VDC	0V	1.5VDC	0V
V 9	6AU6	-.3VDC	.2VDC	6.3VAC	0V	50VDC	50VDC	.2VDC		
V 10	6T8	-.3VDC	-.7VDC	-.3VDC	0V	6.3VAC	0V	0V	-.5VDC	75VDC
V 11	6V6GT	0V	0V	295VDC	330VDC	0V	330VDC	6.3VAC	18VDC	
V 12	6SN7GT	-1.4VDC -33VDC	150VDC 60VDC	6VDC 5.2VDC	2.4VDC	85VDC	6VDC 5.2VDC	0V	6.3VAC	
V 13	6K6GT	285VDC	6.3VAC	350VDC	350VDC	0V	35VDC 0V	0V	48VDC 35VDC	
V 14	6AL5	0V	0V	6.3VAC	0V	1VDC	0V	-1VDC		
V 15	6SN7GT	-5VDC -6.2VDC	110VDC	14VDC	0V	320VDC	14VDC	0V	6.3VAC	
V 16	6BG8G	-2.5VDC	6.3VAC	8.2VDC	0V	-2.5VDC	0V	0V	245VDC	TOP CAP *
V 17	6W4GT	0V	0V	435VDC	0V	355VDC	0V	6.3VAC	0V	
V 18	1X2	* DO NOT MEASURE								
V 19	5U4G	0V	360VDC	0V	350VAC	0V	350VAC	0V	360VDC	
V 20	12LP4A	0V	1.5VDC	PIN 10 350VDC	PIN 180VDC	11 45VDC	PIN 12 6.3VAC			

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	2.9Meg	0Ω	.1Ω	0Ω	†8.8KΩ	†8.8KΩ	0Ω		
V 2	6J6	†11KΩ	†20KΩ	0Ω	.3Ω	220KΩ	22KΩ	0Ω		
V 3	6AG5	2.9Meg	56Ω	.1Ω	0Ω	†6.7KΩ	†6.7KΩ	56Ω		
V 4	6AG5	2.9Meg	56Ω	.1Ω	0Ω	†6.5KΩ	†6.5KΩ	56Ω		
V 5	6AU6	.3Ω	0Ω	.1Ω	0Ω	†6.6KΩ	†6.6KΩ	82Ω		
V 6	6AL5	82Ω	.3Ω	.1Ω	0Ω	6.8KΩ	0Ω	680KΩ		
V 7	6AC7	0Ω	.1Ω	0Ω	1Meg	1.1KΩ	†47KΩ	0Ω	†5.6KΩ	
V 8	12AU7	†20KΩ	†1Meg	6.9KΩ	.1Ω	.1Ω	†1Meg	0Ω	240KΩ	0Ω
V 9	6AU6	470KΩ	82Ω	.1Ω	0Ω	† 83KΩ	†83KΩ	82Ω		
V 10	6T8	1Meg	14KΩ	1Meg	0Ω	.1Ω	0Ω	0Ω	10Meg	†500KΩ
V 11	6V6GT	Inf.	0Ω	†1.4KΩ	†1KΩ	500KΩ	†1KΩ	.1Ω	390Ω	
V 12	6SN7GT	150KΩ 1.1Meg	†680KΩ †3.7Meg	1.5KΩ	40KΩ	†100KΩ	1.5KΩ	0Ω	.1Ω	
V 13	6K6GT	†47KΩ	.1Ω	†675Ω	†675Ω	2.2Meg	5KΩ 0Ω	0Ω	6.5KΩ 1.5KΩ	
V 14	6AL5	27KΩ	27KΩ	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 15	6SN7GT	100KΩ 125KΩ	†240KΩ	1.5KΩ	5.2Meg	†4KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6BG6G	470KΩ	.1Ω	91Ω	Inf.	470KΩ	Inf.	0Ω	†10KΩ	TOP CAP #88Ω
V 17	6W4GT	Inf.	Inf.	†15KΩ	Inf.	†70Ω	Inf.	.1Ω	0Ω	
V 18	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #275Ω
V 19	5U4G	Inf.	25KΩ	Inf.	35Ω	Inf.	35Ω	Inf.	25KΩ	
V 20	12LP4A	0Ω	240KΩ	PIN 10 †61Ω	PIN 120KΩ	11 47KΩ	PIN 12 .1Ω			

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

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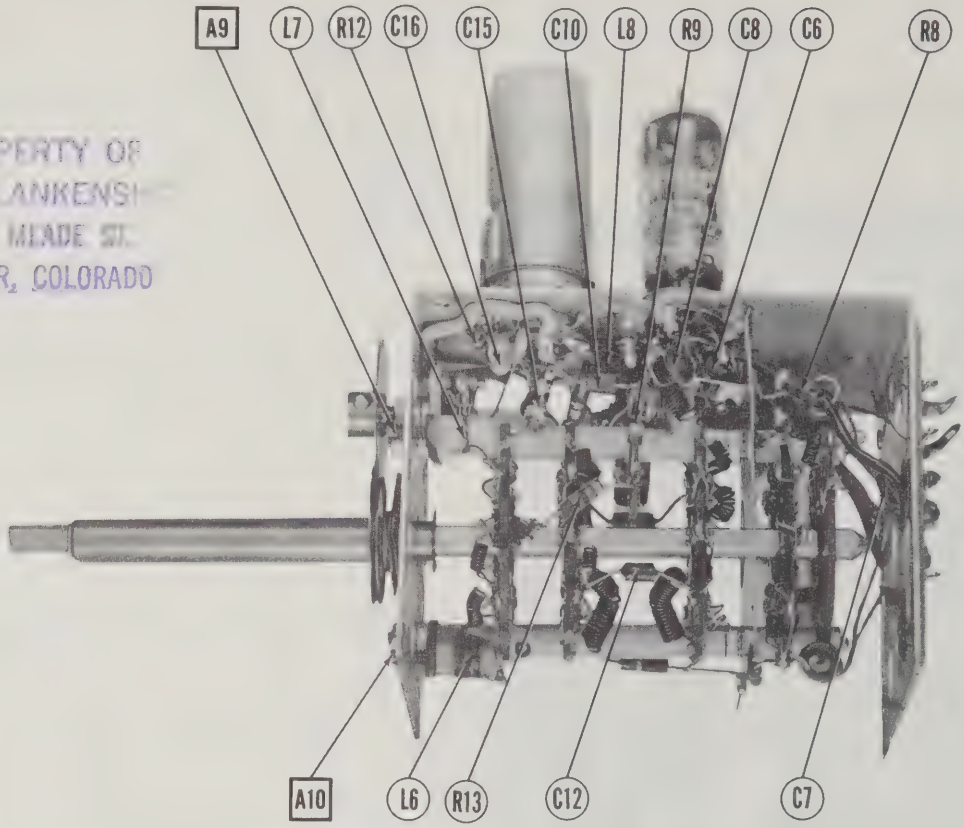
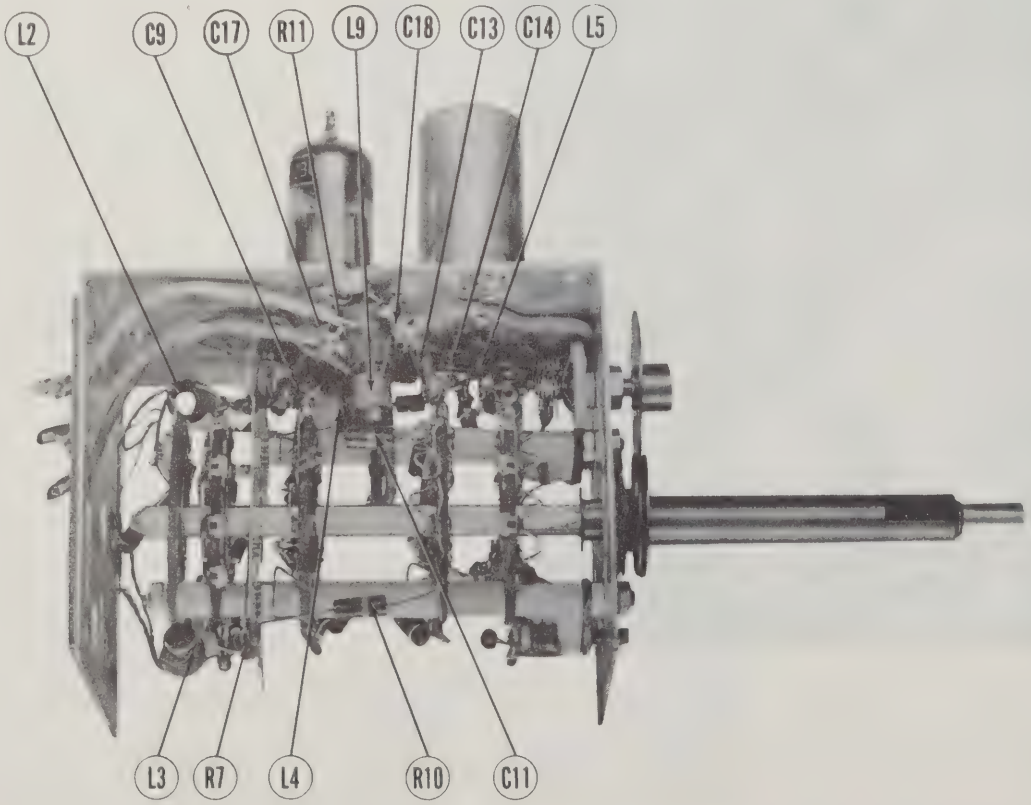
2024 MEADE ST.
DENVER, COLORADO



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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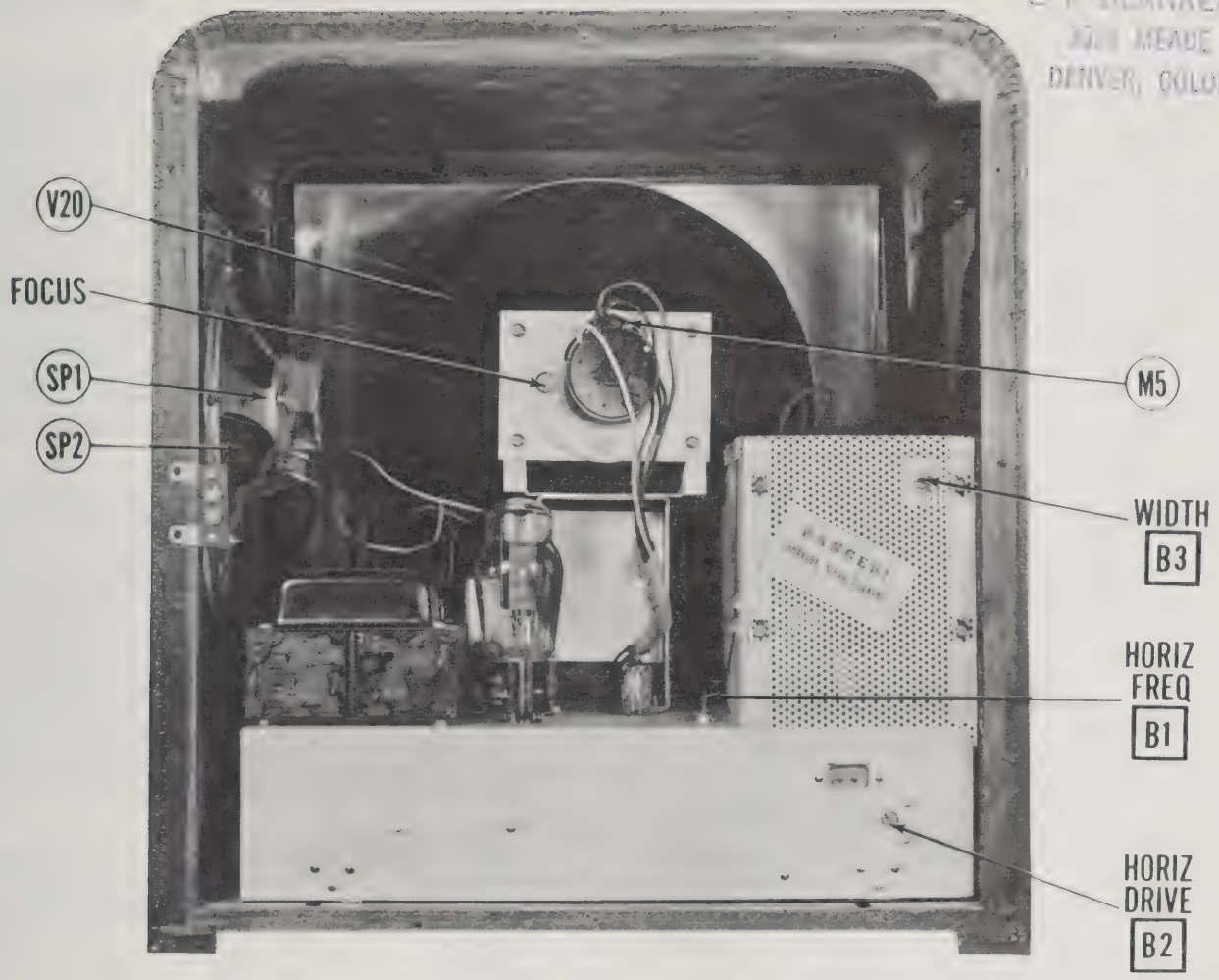
3033 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. The picture should remain in sync. over most of the hold control range.

Turn the width slug (B3) all the way in (clockwise).

Adjust the horizontal drive trimmer (B2) for best compromise between brightness and horizontal linearity, there should be no vertical lines in the picture.

Recheck the adjustment of B1.

Readjust B3 until picture fills the mask horizontally.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JACKSON PART No	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier		6CB6	6CB6	6CK	
B	RF Amplifier		6AG5	6AG5	7BD	
C	RF Amplifier		6BC5	6BC5	7BD	
V2	Converter		6J6	6J6	7BF	
V3	1st Video IF Amp.		6AG5	6AG5	7BD	
V4	2nd Video IF Amp.		6AG5	6AG5	7BD	
V5	3rd Video IF Amp.		6AU6	6AU6	7BK	
V6	Video Detector - AGC Rectifier		6AL5	6AL5	6BT	
V7	Video Amplifier		6AC7	5AC7	8N	
V8	DC Restorer-Sync. Separator - Sync. Phase Inverter		12AU7	12AU7	9A	
V9	Sound IF Amplifier		6AU6	6AU6	7BK	
V10	Ratio Detector - AF Amplifier		6T8	6T8	9E	
V11	Audio Output		6V6GT	6V6GT	7AC	
V12	Vert. Mult.		6SN7GT	6SN7GT	8BD	
V13	Vertical Mult.		5K6GT	5K6GT	7S	
V14	Horiz. Phase Det.		6AL5	6AL5	6BT	
V15	Horiz. Mult.		6SN7GT	6SN7GT	8BD	
V16A	Horiz. Output		6BG6G	6BG6G	5BT	
B	Horiz. Output		6CD6G	6CD6G	5BT	
V17	Damper		6W4GT	6W4GT	4CG	
V18	H V Rectifier		1X2	1X2	7CB	
V19	L V Rectifier		5U4G	5U4G	5T	
V20A	Picture Tube		12LP4A	12LP4A	12D	Models 12C, 12T, 312, 412
B	Picture Tube		10BP4	10BP4	12D	Models 10C, 10T
C	Picture Tube		14BP4	14BP4	12D	Models 14C, 14T
D	Picture Tube		16RP4	16RP4	12D	Models 16C, 16T, 316, 416
E	Picture Tube		16TP4	16TP4	12D	Models 16C, 16T, 316, 416

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JACKSON PART No	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		BC-301	PRS450/40-40		UPT4445		TVA-2740	Filter Red
B	40	450								Filter Red
C2	80	450		BC-298	PRS450/40-40		UP8045		TVA-1716	Filter
C3A	20	450		BC-442	PRS450/20-20		UPT11145V		TVA-2730	Decoupling
B	10	450			PRS50/100		15		TVA-1711	V. Amp. Screen
C	150	50			PRS50/50					Vert. Output Cathode
C4	8	300			PRS350/8		BR835A		TVA-1603	Horiz. Output Cathode *
C5	4	50		BC-265	PRS150/4		BR550		TVA-1303	Stabilizing Cap
C6	15				SU5	D6-15Ω		GP1L-15	19C22	RF Coupling
C7	1000				BPD-001	DD-102		811-001	19C1	AGC Filter
C8	1000				BPD-001	DD-102		811-001	19C1	RF Amp. Dec.
C9	470				SU470	D6-471		GP2K-470	19C15	RF Amp. Dec.
C10	1					TCZ-1				RF Coupling
C11	.5					TCZ-.5				RF Coupling
C12	1.8									RF Coupling
C13	470				SU470	D6-471		GP2K-470	19C15	Mixer Grid Filter
C14	1.5				SU1.5NPO	TCZ-1.5		NPOK-1.5		Osc. Coupling
C15	10				SU10NPO	TCZ-10		NPOK-10	19C3	Osc. Grid Cap
C16	3				SU3NPO			NPOK-3		Osc. Feedback
C17A	1000				BPD-2X001	DD-2-102		812-2X001	29C7	RF Bypass
B	1000									Conv. Filament
C18	10				SU10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C19	100				SU100	D6-101	5WS71	GP1K-100	19C11	IF Coupling
C20	5000				BPD-005	DD-502	1DSD5	811-005	29C1	AGC Filter
C21	5000				BPD-005	DD-502	1DSD5	811-005	29C1	1st V. IF Dec.
C22	5000				BPD-005	DD-502	1DSD5	811-005	29C1	1st V. IF Fil.
C23	100				SU100	D6-101	5WS71	GP1K-100	19C11	IF Coupling
C24	5000				BPD-005	DD-502	1DSD5	811-005	29C1	AGC Filter
C25	5000				BPD-005	DD-502	1DSD5	811-005	29C1	2nd V. IF Dec.
C26	5000				BPD-005	DD-502	1DSD5	811-005	29C1	2nd V. IF Fil.
C27	5000				BPD-005	DD-502	1DSD5	811-005	29C1	3rd V. IF Dec.
C28	5000				BPD-005	DD-502	1DSD5	811-005	29C1	3rd V. IF Cathode
C29	5000				BPD-005	DD-502	1DSD5	811-005	29C1	3rd V. IF Fil.
C30	220	500			SU220	D6-221		GP2K-220	19C13	Fixed Trimmer
C31	91				SU100	D6-101	5WS71	GP1K-100	19C11	IF Coupling
C32	.25	400			P488-25		GT4P25		4TM-P25	AGC Filter †
C33	10000				BPD-01	DD-103	PTE4S1	821-01	38C1	RF Bypass
C34	5	500			1468-000005	TCZ-4.7	5WS75	GP1K-5	MS-55	V. Diode Filter
C35	.05	200			P288-05	DF-503	PTE4S5		3TM-S5	Video Coupling
C36	10000				BPD-01	DD-103	PTE4S1	821-01	38C1	V. Amp. Screen
C37	.1	400			P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C38	.1	400			P488-1	DF-104	PTE4P1		4TM-P1	Pic. Tube Cath.
C39	2.2					TCZ-2.2				S. IF Coupling
C40	47				SU47N080	TCZ-47		N080-338-47	29C14	S. IF Coupling †
C41	47				SU47N080			N080-338-47		Fixed Trimmer
C42	10000				BPD-01	DD-103	PTE4S1	821-01	38C1	S. IF Dec. ‡
C43	10000				BPD-01	DD-103	PTE4S1	821-01	38C1	S. IF Cathode
C44	300	500			1468-0003	D6-301	5WS73	GP1K-300	1FM-335	Diode Load Cap
C45	2500				1467-0025	D6-252	1WSD25	GP2M-0025	1FM-225	De-emphasis
C46	10000				BPD-01	DD-103	PTE4S1	821-01	38C1	Audio Coupling
C47A	250		#65A-407		51250	#PC-70	5WS72S	GP2K-250	1FM-325	AF Amp. Plate
B	5000				BPD-005		PTE6D5	811-005	6TM-D5	Audio Coupling
C48	.005	600			P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate
C49A	3000		#65A-443		P688-003	#	PTE6D2	GP2M-003	6TM-D2	Integrator Net
B	5000				P688-005	PC-100	PTE6D5	811-005	6TM-D5	Integrator Net
C	5000				P688-005		PTE6D5	811-005	6TM-D5	Integrator Net
C50	.01	600			P688-01	D6-103	PTE6S1	821-01	6TM-S1	Vert. M. V. Feedback
C51	.05	600			P688-05		PTE6S5		6TM-S5	Vert. Discharge
C52	.35	600			694-25		GT6P25		6TM-P25	Vert. Sweep Coupling
C53	1500	500			1467-0015	D6-152	1WSD15	GP2L-0015	1FM-215	Horiz. Sync. Coupling
C54	1500	500			1467-0015	D6-152	1WSD15	GP2L-0015	1FM-215	Horiz. Sync. Coupling
C55	10000				BPD-01	DD-103	PTE6S1	821-01	38C1	AFC Filter
C56	.05	600			P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback ¶
C57	5000				BPD-005	DD-502	1DSD5	811-005	29C1	AFC Filter

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JACKSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	5000			BPD-005	DD-502	1DSD5	811-005	29C1	AFC Filter
C59	400	500		1468-0004	D6-401	5WS74	GP2K-390	1FM-34	Horiz. MV Feedback
C60	3900	500		1464-004		1DR5D4		MS-34	Fixed Trimmer
C61	400	500		1468-0004	D6-391	5WS74	GP2K-390	1FM-34	Horiz. Discharge * *
C62	240	500		1468-00025	D6-251	5WS72S	GP2K-250	1FM-325	Horiz. Sweep Coupling † †
C63	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C64	.25	600		684-25		GT6P25		6TM-P25	Damper Filter † †
C65	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Fixed Trimmer ¶
C66	.05	400		P488-05	DF-503	PTE4S5		6TM-S5	Fixed Trimmer ¶
C67	.25	600		684-25		GT6P25		6TM-P25	Horiz. Sweep Coupling
C68	500	20000		HV20B	TV2-502				E.V. Filter
C69	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Line Filter ¶

* Some models use .1MFD or .35MFD in this application.
† Some models use .1MFD in this application.
‡ Some models use 39MMF in this application.
§ Some models use .02MFD in this application.
• Items C47A, C47B, R43A and R43B are combined into one unit.
Items C49A, C49B, C49C, R51A, R51B and R51C are combined into one unit.
¶ Not used in all models.
* * Some models use 150MMF in this application.
† † Some models use .05 MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JACKSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	100Ω	‡		Concentrikit			
B	1Meg	‡	10B-419	B11-108 # B13-137 # E-202 #	RVT-116	SBB-636-S	Contrast Control - Front Volume Control - Rear
C	Shaft End						Attach Per Instructions in "Concentrikit"
D	Switch			T6-1 #			Attach Per Instructions in "Concentrikit"
R2A	1Meg	‡	10B-420-3	Q11-137	AG-61-S	AN-69	Vertical Hold Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R2A Per Instructions
R3A	25KΩ	‡	10B-420-2	Q11-120	AG-40-S	AN-26	Horizontal Hold Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R3A Per Instructions
R4A	5000Ω	‡	10B-420-5	Q11-114	AM-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A Per Instructions
R5A	3 Meg	‡	10B-420-4	Q11-140	AG-85-S	AN-84	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A Per Instructions
R6A	250KΩ	‡	10B-420-1	Q11-130	AG-55-S	AN-50	Brightness Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A Per Instructions

Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JACKSON PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	4700Ω	‡		BTS-4700	Antenna Coil Shunt
R8	2200Ω	‡		BTS-2200	RF Amp. Grid
R9	2200Ω	‡		BTS-2200	RF Amp. Decoupling
R10	330KΩ	‡			Mixer Grid Coil Shunt
R11	15KΩ	‡			Mixer Plate
R12	22KΩ	‡			Osc. Grid
R13	4700Ω	‡		BTS-4700	Osc. Plate
R14	330Ω 20%	‡		BTS-330	AGC Network - See Note 2
R15	10KΩ	‡			1st Video IF Amp. Grid
R16	56Ω 20%	‡			1st Video IF Amp. Cathode
R17	100Ω 20%	‡		BTS-100	1st Video IF Amp. Decoupling
R18	100Ω 20%	‡		BTS-100	Decoupling
R19	150Ω	‡		BTS-150	AGC Network
R20	82000Ω 20%	‡		BTS-8200	2nd Video IF Amp. Grid
R21	56Ω 20%	‡			2nd Video IF Amp. Cathode
R22	22KΩ	‡			3rd Video IF Transformer Shunt
R23	82Ω	‡			3rd Video IF Amp. Cathode
R24	100Ω 20%	‡		BTS-100	3rd Video IF Amp. Decoupling
R25	6800Ω 20%	‡		BTS-6800	Video Det. Diode Load
R26	680KΩ	‡		BTS-680K	AGC Network
R27	2.2Meg 20%	‡		BTS-2.2Meg	AGC Network
R28	1Meg 20%	‡		BTS-1Meg	Video Amp. Grid
R29	82Ω 5%	1			Video Amp. Cathode
R30	47KΩ 20%	1		BTA-47K	Video Amp. Screen
R31	5600Ω	2		BTB-5600	Video Amp. Plate
R32	240KΩ 5%	‡			DC Restorer Load - See Note 3
R33	220KΩ 5%	‡		BTS-220K-5%	Voltage Divider
R34	2200Ω	‡		BTS-2200	Picture Tube Grid
R35	47KΩ 20%	‡		BTS-47K	Picture Tube Cathode
R36	470KΩ	‡		BTS-470K	Sound IF Amp. Grid
R37	82Ω	‡		BTS-83	Sound IF Amp. Cathode
R38	82KΩ	‡		BTA-82K	Sound IF Amp. Decoupling
R39	6800Ω	‡		BTS-6800	Ratio Det. Diode Load
R40	6800Ω	‡		BTS-6800	Ratio Det. Diode Load
R41	33KΩ	‡		BTS-33K	De-emphasis
R42	10Meg	‡		BTS-10Meg	AF Amp. Grid - See Note 10
R43A	500KΩ	‡	•	BTS-470K	AF Amp. Plate
B	500KΩ	‡		BTS-470K	Output Grid
R44	390Ω	2		BTB-390	Output Cathode
R45	1000Ω	2		BTB-1000	Decoupling
R46	1Meg	‡		BTS-1Meg	Sync. Sep. Plate - See Note 4
R47	4700Ω	‡		BTS-4700	Sync. Phase Inv. Cathode
R48	2200Ω	‡		BTS-2200	Sync. Phase Inv. Cathode
R49	22KΩ	‡		BTB-22K	Sync. Phase Inv. Plate
R50	8200Ω 20%	‡		BTS-8200	Voltage Divider
R51A	22KΩ	‡	#	BTS-22K	Integrator
B	8200Ω	‡		BTS-8200	Integrator
C	8200Ω	‡		BTS-8200	Integrator
R52	1500Ω 20%	‡		BTS-1500	Vertical MV Cathode
R53	680KΩ 20%	‡		BTS-680K	Vertical MV Plate - See Note 5
R54	150KΩ 20%	‡		BTS-150K	Vertical MV Grid
R55	100KΩ 20%	‡		BTS-100K	Vertical MV Plate
R56	6800Ω 20%	‡		BTS-6800	Vertical Peaking - See Note 6

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JACKSON PART No.	IRC PART No.	IDENTIFICATION CODES
R57	2.2Meg 20%	‡		BTS-2.2Meg	Vertical Output Grid
R58	1500Ω 20%	‡		BTS-1500	Vertical Output Cathode
R59	27KΩ	‡		BTS-27K	Horizontal Phase Det. Diode Load
R60	100KΩ 20%	‡		BTS-100K	Horizontal Phase Det. Diode Load
R61	100KΩ 20%	‡		BTS-100K	Horizontal Phase Det. Diode Load
R62	4.7Meg 20%	‡		BTS-4.7Meg	Horizontal Phase Det. Diode Load
R63	470KΩ 20%	‡		BTS-470K	Horizontal AFC Filter
R64	1500Ω 20%	1		BTA-1500	Horizontal MV Cathode
R65	3900Ω	‡		BTS-3900	Horizontal MV Plate
R66	100KΩ	‡		BTS-100K	Horizontal MV Grid
R67	240KΩ 5%	‡			Horizontal MV Plate - See Note 3
R68	47KΩ	‡		BTS-4700	Horizontal Peaking - See Notes 1 and 7
R69	47Ω 20%	‡			Parasitic Suppressor
R70	470KΩ 20%	‡		BTS-470K	Horizontal Output Grid
R71	91Ω	2		BW-2-91	Horizontal Output Cathode - Wire Wound - See Notes 1 and 8
R72	10KΩ 20%	2		BTB-10K	Horizontal Output Screen - See Note 9
R73	15KΩ	10		1 3/4A-15K	Damper Load - Wire Wound - See Note 1
R74	680KΩ	‡			HV Filter - See Note 5
R75	8500Ω	10			Filter - Wire Wound
R76	4700Ω	‡		BTS-4700	Horizontal Feedback

Note 1. Not used in all models.
Note 2. Some models use 150Ω resistor in this application.
Note 3. Some models use 270KΩ resistor in this application.
Note 4. Some models use 1.5meg resistor in this application.
Note 5. Some models use 470KΩ resistor in this application.
Note 6. Some models use 4700Ω resistor in this application.
Note 7. Some models use 6800Ω resistor in this application.
Note 8 Some models use 100Ω resistor in this application.
Note 9. Some models use 30KΩ 5 watt, wire wound resistor in this application.
Note 10. Some models use series resistor in this application to obtain desired value.
• Items R43A, R43B, C47A, and C47B are combined into one unit.
Items R51A, R51B, R51C, C49A, C49B and C49C are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	740VCT	5VAC	6.3VAC	12A306 ①	P-8159③		TP-360
	② 1.8A	.240ADC	② 3A	8.2A	12A449 ②			

① Used in 12" models.
② Used in 16" models.
③ Drill New Mtg. Holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	275Ω	9Ω	12F-345 ①			TFB-3	Horizontal Output Trans.
	Tap 88Ω	Tap .53Ω	12C-598 ④				
		SEC. 2	12F-450 ②				
		0Ω					
T3	615	8.2Ω	12C-351	A-8112	A-3036 ③	TS0-5 ③	Vertical Output Trans.
T4A	12.5Ω		13M-347				Horizontal Deflection Coil
B	60Ω						Vertical Deflection Coil

① Used in 12" models.
② Used in 16" models.
③ Drill new mounting hole.
④ Used in 14" models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T5	5.8KΩ	3.7Ω	390Ω	.63Ω	12C-314	A-3877	A-2930 ③	R0-9 ③	③ Drill new mounting hole

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	3.1Ω	3.7Ω		ST108 Mod. P6-X	6A15	
	CONE DIA.	V. C. DIA.				
SP2	5 13/16"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 μA)	REPLACEMENT DATA: JACKSON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
L1	.240A	61Ω	2.5 Henries	17B-440	C-2326	C-2991 ③	TR3300 ③	③ Drill new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

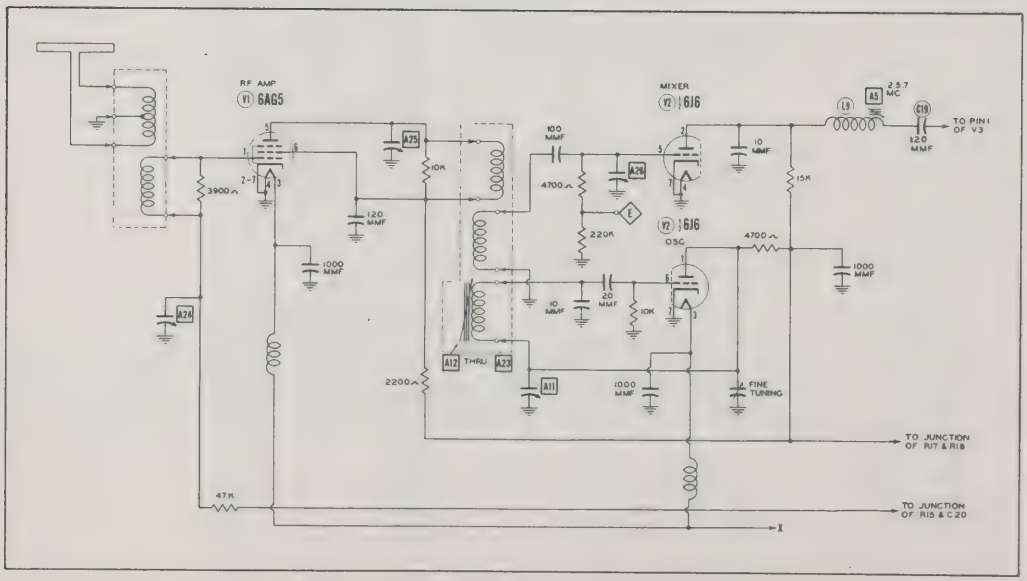
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	JACKSON PART No.	MEISSNER PART No.	IRC PART No.	
L2	Ant. Coil	.1Ω	.1Ω				
L3	Ant. Coil	.1Ω	.1Ω				
L4	RF Coil	0Ω					
L5	Mixer Grid Coil	0Ω					
L6	Osc. Coil	0Ω					
L7	Osc. Coil	0Ω					
L8	Fil. Choke	.2Ω				CLA	.47 Microhenry
L9	1st Video IF	.6Ω					
L10	Fil. Choke	0Ω					
L11	2nd Video IF	.1Ω		13A-188			
L12	Fil. Choke	0Ω					
L13	3rd Video IF	.1Ω	.3Ω	13A-189			
L14	4th Video IF	.1Ω	.3Ω	13A-189			
L15	Sound Trap	0Ω		13F-190			
L16	Peaking	5Ω		13F-193			120 Microhenries
L17	Peaking	14Ω		1BF-194			600 Microhenries
L18	Peaking	7.5Ω		1BF-195			240 Microhenries Wound on 18KΩ resistor
L19	Peaking	10Ω		13F-196			380 Microhenries
L20	Sound IF	1.8Ω		13F-389			
L21	Ratio Det. Trans.	4.5Ω	.2Ω	13K-191			
L22	Horiz. Freq. Coil	100Ω		13F-192			
L23	Width Coil	.6Ω		13N-348			

FUSES

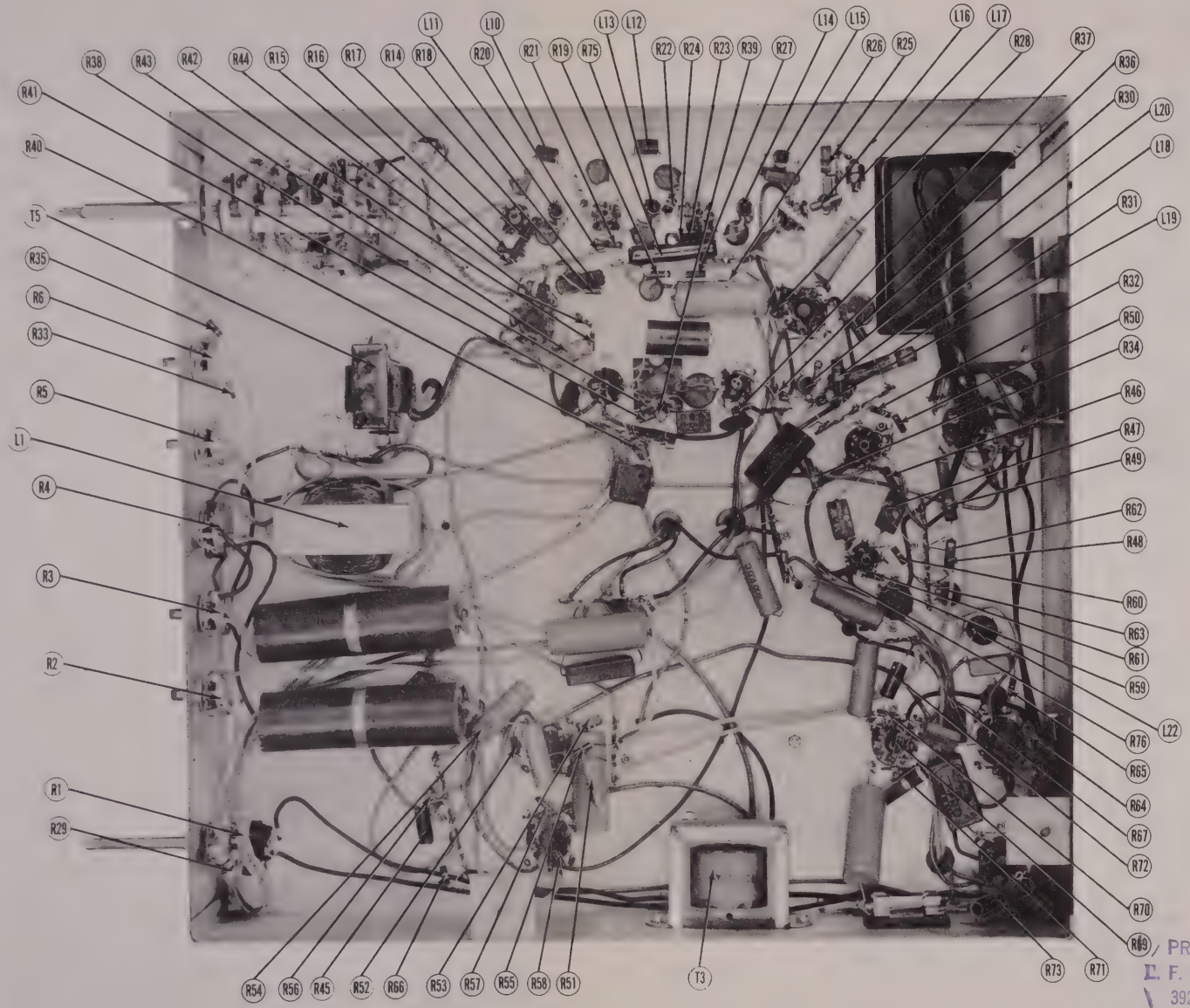
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			JACKSON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG PigTail	5A			318005		
M2	3AG	.250A	46B-318	47B-319	312.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	JACKSON PART No.	NOTES
M3A	RF Tuner	214-130	
B	RF Tuner	214-113	
M4A	Focus Magnet	204-129	
B	Focus Magnet	204-135	
M5	Ion Trap	208-119	
B2	Trimmer	8E-458	Horizontal Drive

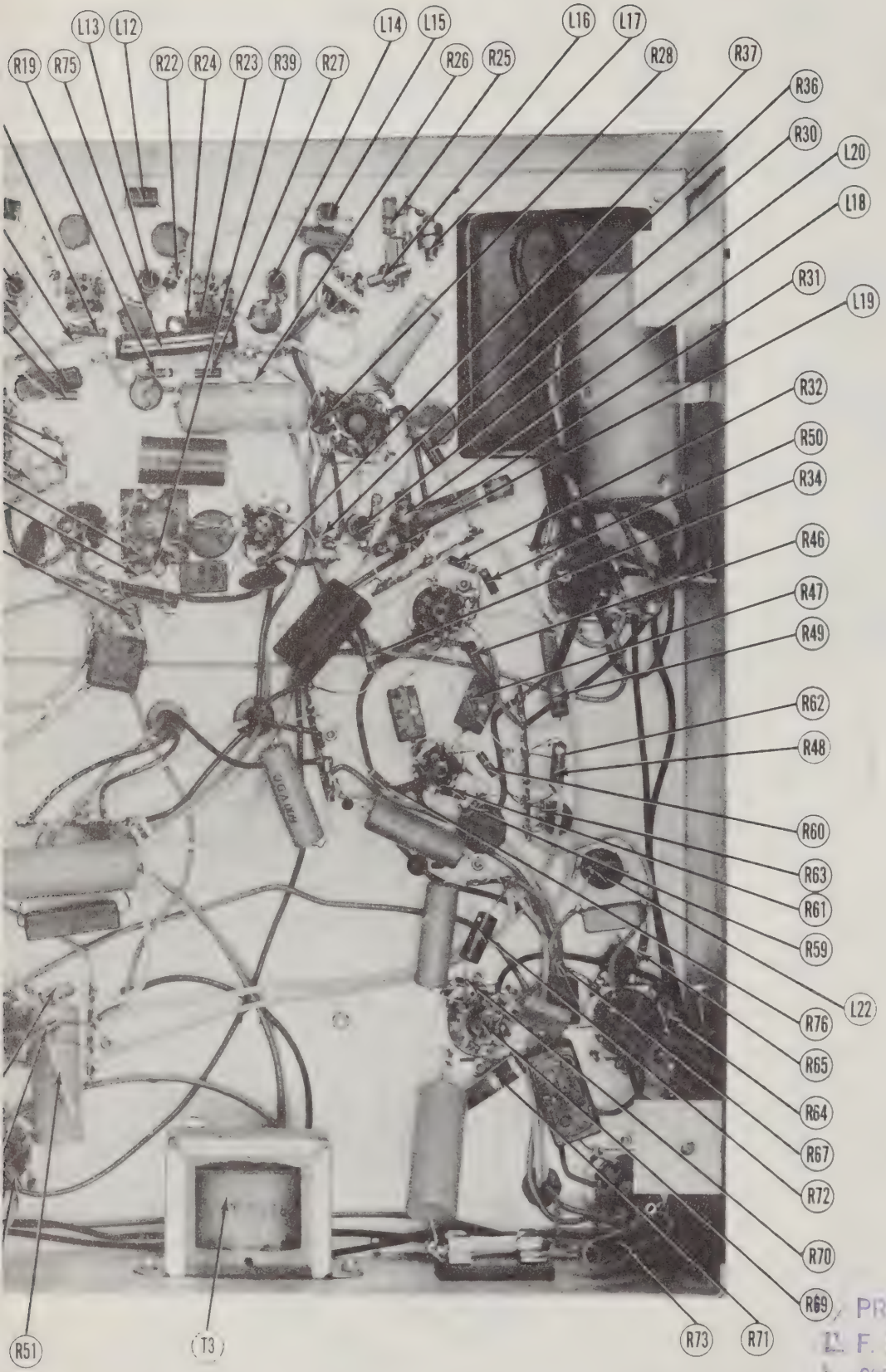


ALTERNATE TUNER - PART NO. 214-113



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

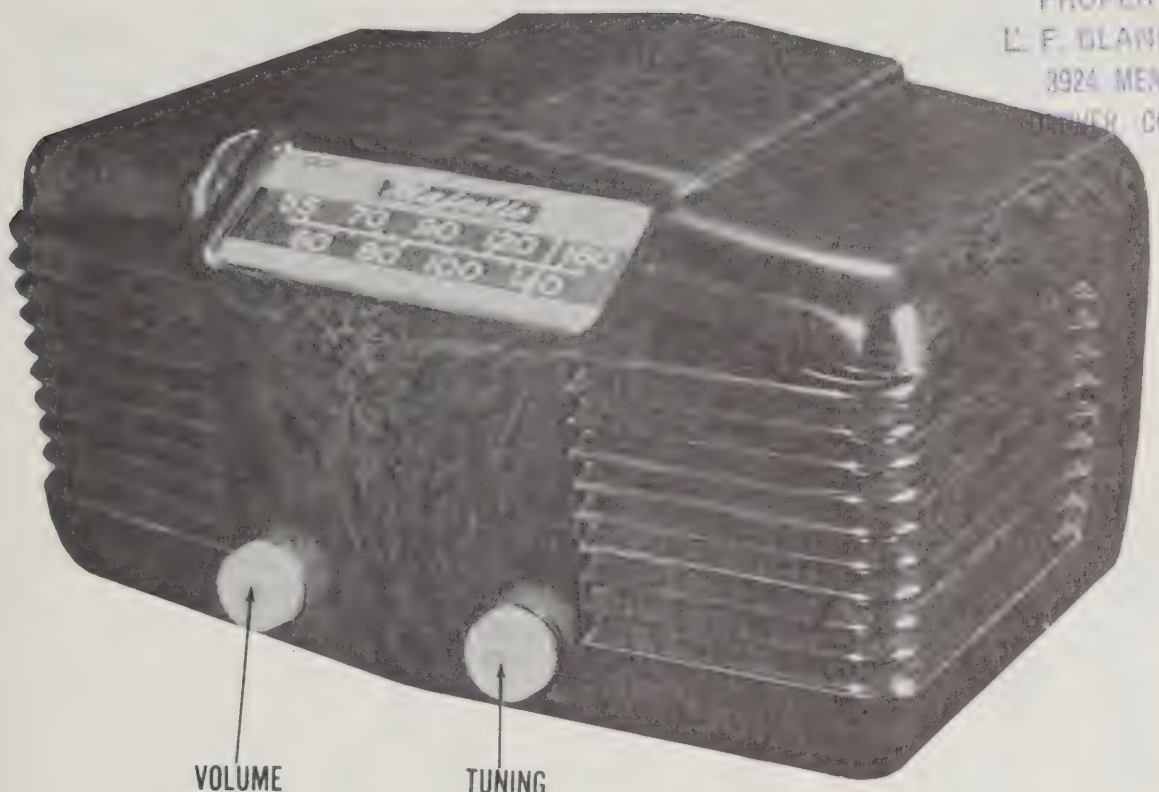


PROPERTY OF
F. BLANKENSHIP
3824 MEADE ST.
DENVER, COLORADO

STOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MENDE ST.
DENVER, COLORADO

MAJESTIC
MODELS 5LA7, 5LA8



MAJESTIC
MODELS 5LA7, 5LA8

MAJESTIC MODEL 5LA7

TRADE NAME	Majestic, Models 5LA7, 5LA8
MANUFACTURER	Majestic Radio & Tel., Div. of Wilcox-Gay Corp., 70 Washington St., Brooklyn, New York
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 8 (Grid) of 12SA7 (V1) Low side to B- .	455KC (400% Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	5.415-4	PRS150/40-40-40		EDL44215		TVA-3451	Filter Blue
B	40	150							Filter Red
C	20								Filter Green
C2	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Ant. Isolation
C3	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	AVC Filter
C4	47			SI47	D6-470	5W5Q5	GP1K-47	19C25	Osc. Grid Cap.
C5	100			SI100	D6-101	5W5T1	GP1K-100	19C11	Diode RF Filter
C6	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C7	220			SI220	D6-221	5W5T2	GP2K-220	19C13	AF Amp. Plate
C8	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C9	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Output Plate
C10	.25	400		P488-25		GT4P25		72P53	Line Isolation
C11	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	8.201-8	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req	Not Req	KSS-3	Not Req	Attach to R1A per instructions
C	Switch		Not Req	76-1	SWB	Not Req	Attach to R1A per instructions

RESISTORS

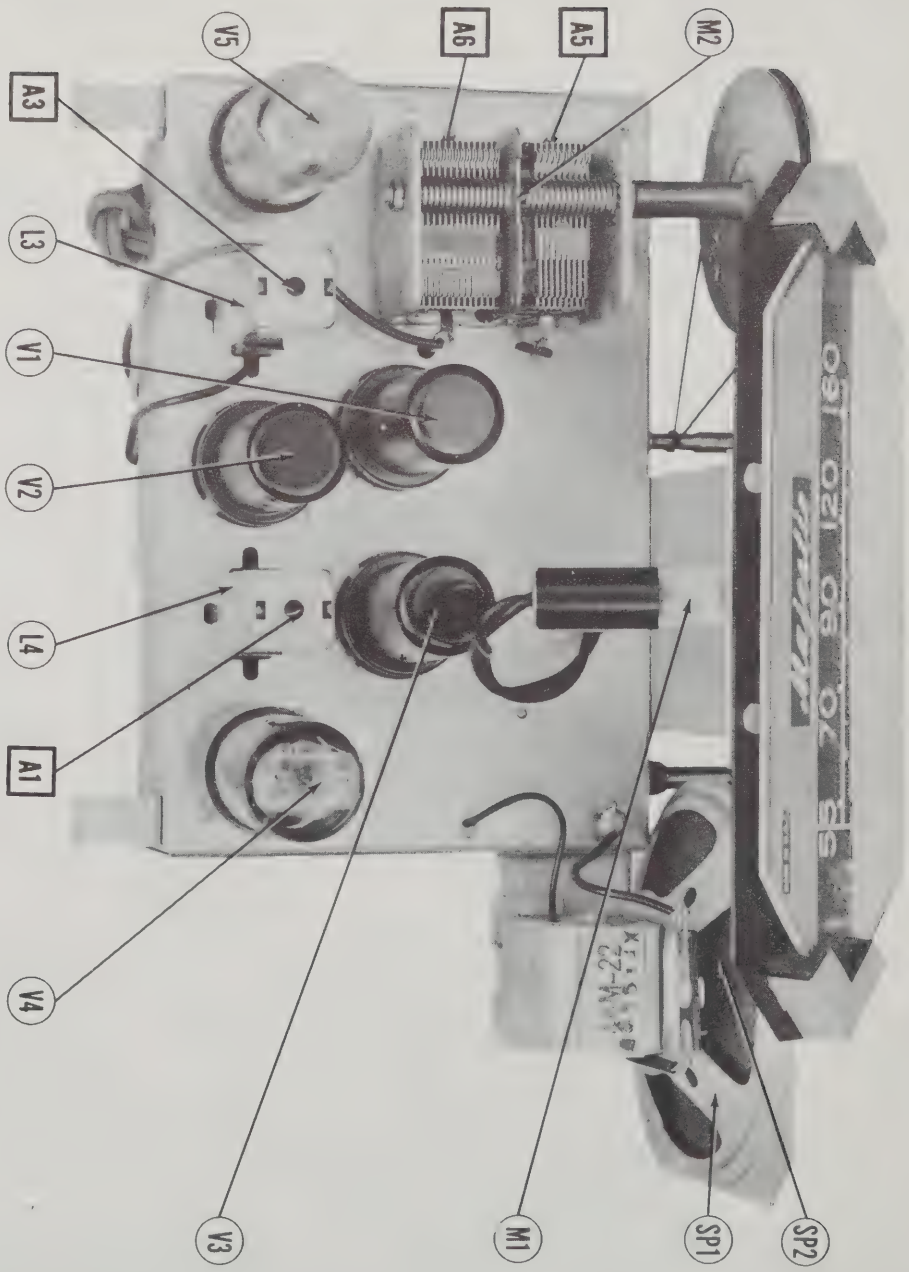
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½			Osc. Grid
R3	2.2Meg	½		BTS-2.2Meg	AVC Network
R4	270Ω	½		BTS-270	IF Amp. Cathode - See Note
R5	47KΩ	½		BTS-47K	Diode Filter
R6	2.2Meg	½		BTS-2.2Meg	AF Amp. Grid
R7	220KΩ	½		BTS-220K	AF Amp. Plate
R8	470KΩ	½		BTS-470K	Output Grid
R9	150Ω	½		BTS-150	Output Cathode
R10	1000Ω	1		BTA-1000	Filter
R11	100Ω	1		BTA-100	Filter
R12	220KΩ	½		BTS-220K	Isolation

Note Not used in all models

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.15KΩ	3.2Ω	180Ω	.73Ω	9.2492	A-3876	A-2928	RO-2 ①	Drill one new mounting hole

CHASSIS—TOP VIEW



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PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MAJESTIC PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	3.2Ω	30.329			
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

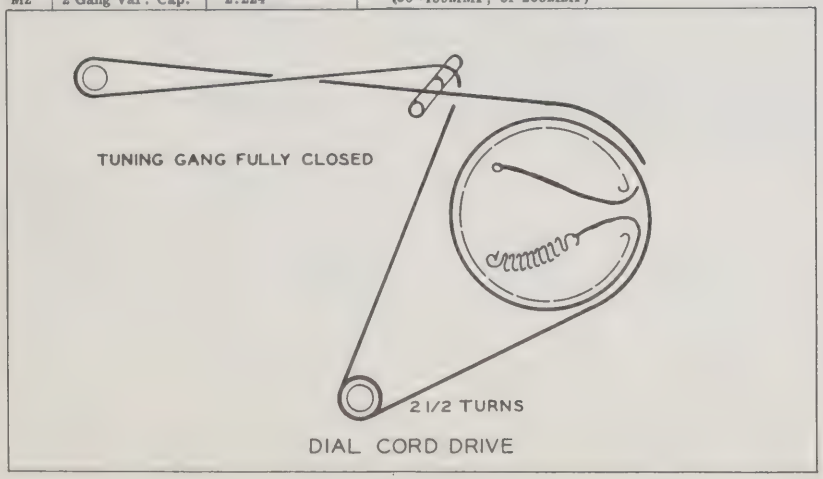
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	MEISSNER PART No.	
L1	Loop Ant.	.4Ω	2.2 Ω	1.527		
L2	Osc. Coil	.7Ω	5.8Ω	1.526		
L3	1st. IF	18Ω	18Ω	1.445-5		
L4	2nd. IF	18Ω	18Ω	1.445-5		

DIAL LIGHTS

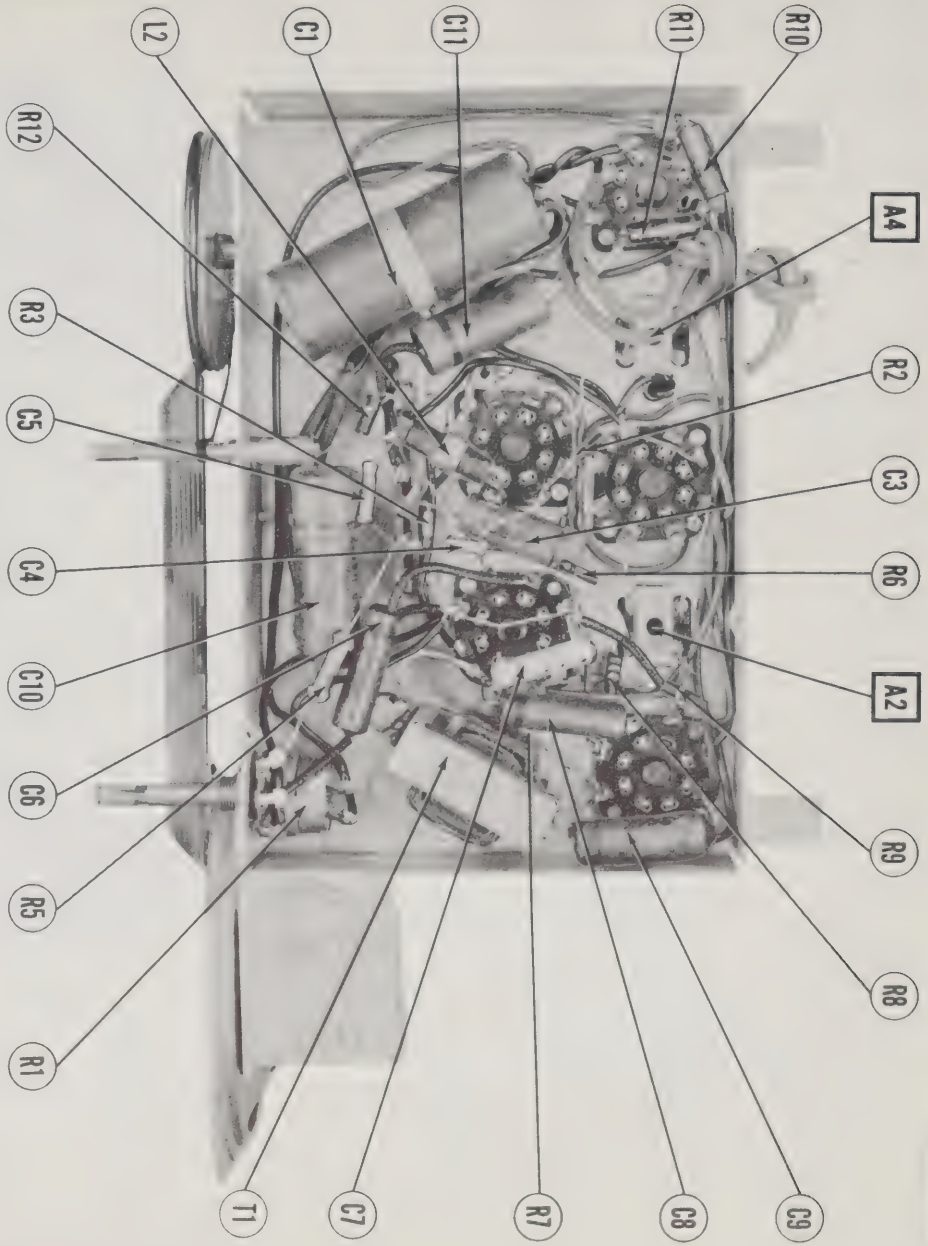
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAJESTIC PART No.		NOTES
M1	Bayonet	6-8	.15	Brown			Type #47

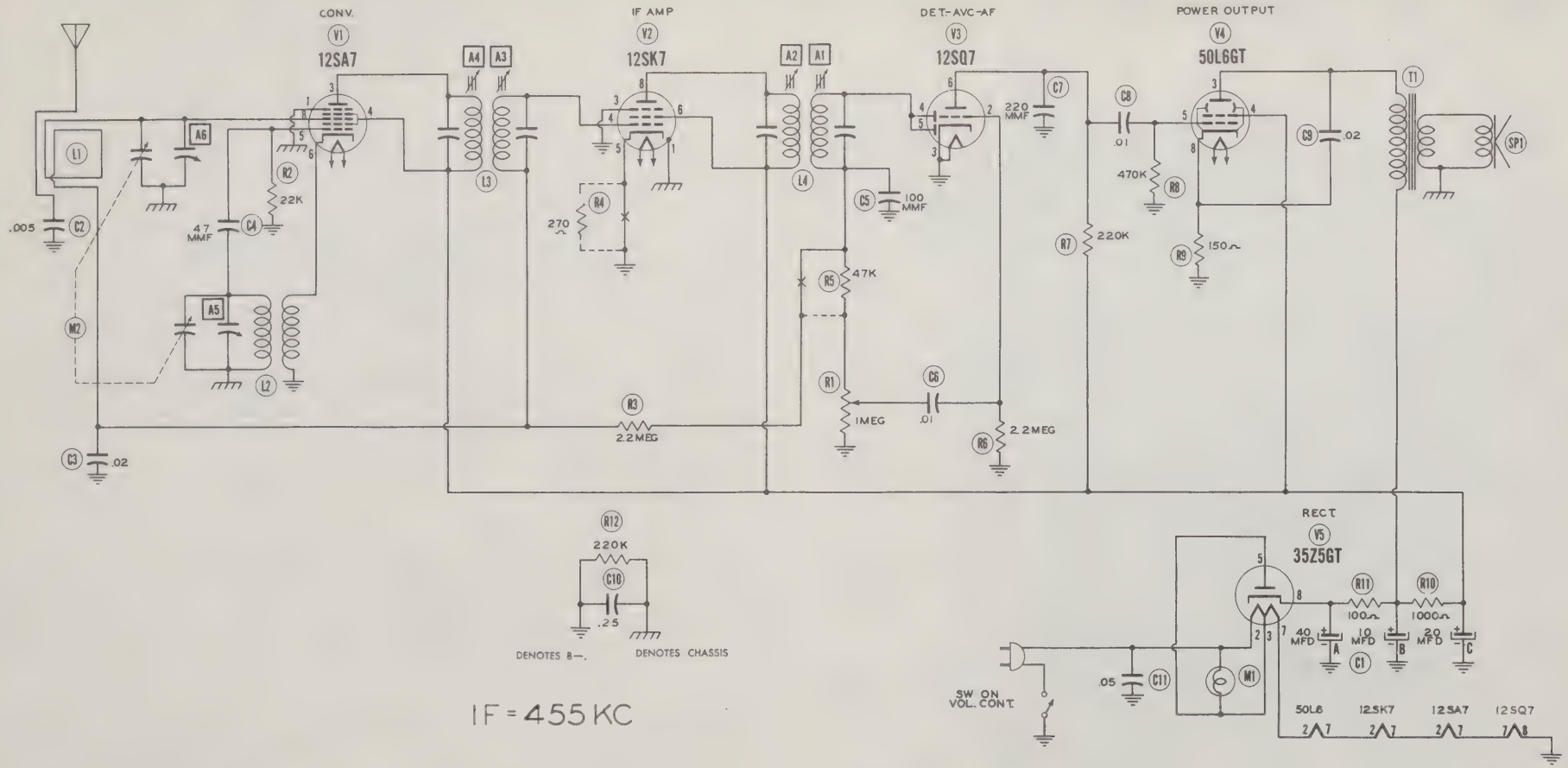
MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
M2	2 Gang Var. Cap.	2.224	(36-459MMF, 31-205MMF)



CHASSIS—BOTTOM VIEW





DENOTES B—. DENOTES CHASSIS

IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	25VAC	80VDC	80VDC	§-6.4VDC	0V	12VAC	-.1VDC
V 2	12SK7	0V	37VAC	0V	-.1VDC	0V	80VDC	25VAC	80VDC
V 3	12SQ7	0V	-.4VDC	0V	-.4VDC	-.4VDC	45VDC	12VAC	0V
V 4	50L6GT	0V	85VAC	100VDC	80VDC	0V	105VDC	37VAC	5.4VDC
V 5	35Z5GT	0V	117VAC	110VAC	80VDC	110VAC	105VDC	85VAC	110VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	220KΩ	25Ω	†1.1KΩ	†1.1KΩ	22KΩ	.7Ω	13Ω	3.2Meg
V 2	12SK7	220KΩ	38Ω	0Ω	3.2Meg	0Ω	†1.1KΩ	25Ω	†1.1KΩ
V 3	12SQ7	220KΩ	2.2Meg	0Ω	1Meg	1Meg	†220KΩ	13Ω	0Ω
V 4	50L6GT	Inf.	90Ω	†280Ω	†1.1KΩ	470KΩ	†100Ω	38Ω	150Ω
V 5	35Z5GT	0Ω	120Ω	115Ω	†1.1KΩ	115Ω	†100Ω	90Ω	55KΩ

† MEASURED FROM PIN 8 OF V5

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132-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

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MODEL 51-T2176

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DATE 5-51 SET 132 FOLDER 10

PHOTOFACT* Folder

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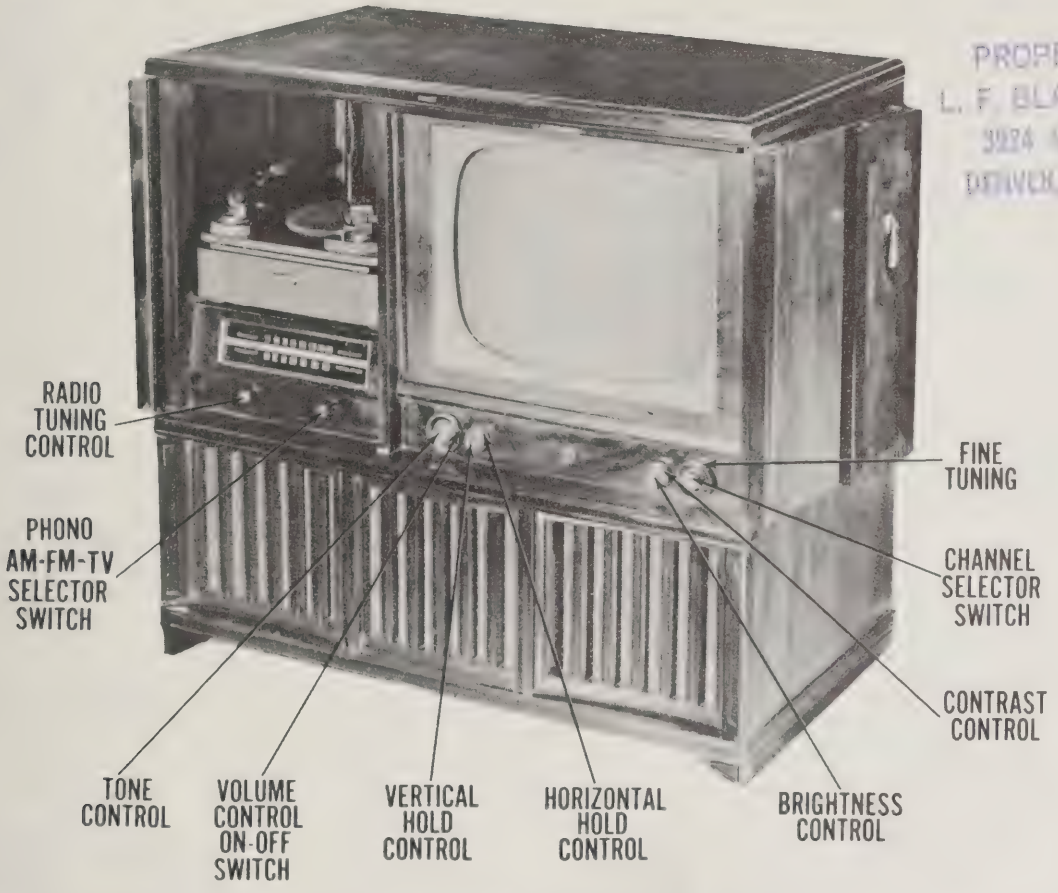

PHILCO MODEL 51-T2176

TRADE NAME	Philco, Models 51-T2102 (Code 122), 51-T2130, 51-T2132, 51-T2133 (All Code 121), 51-T2134, 51-T2136 51-T2138, 51-T2175, 51-T2176 (All Code 124)
MANUFACTURER	Philco Corp., Tioga And "C" Streets, Philadelphia, Pa.
TYPE SET	Television Receiver
TUBES	Twenty Three (TV "Only" Receivers) Twenty Eight (Combination Receivers)
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING (TV) 2.6 Amp. @ 117 Volts AC (Radio) 1.6 Amp. @ 117 Volts AC
TUNING RANGE	(TV) Channels 2 thru 13 (AM) 540-1620KC (FM) 88-108MC

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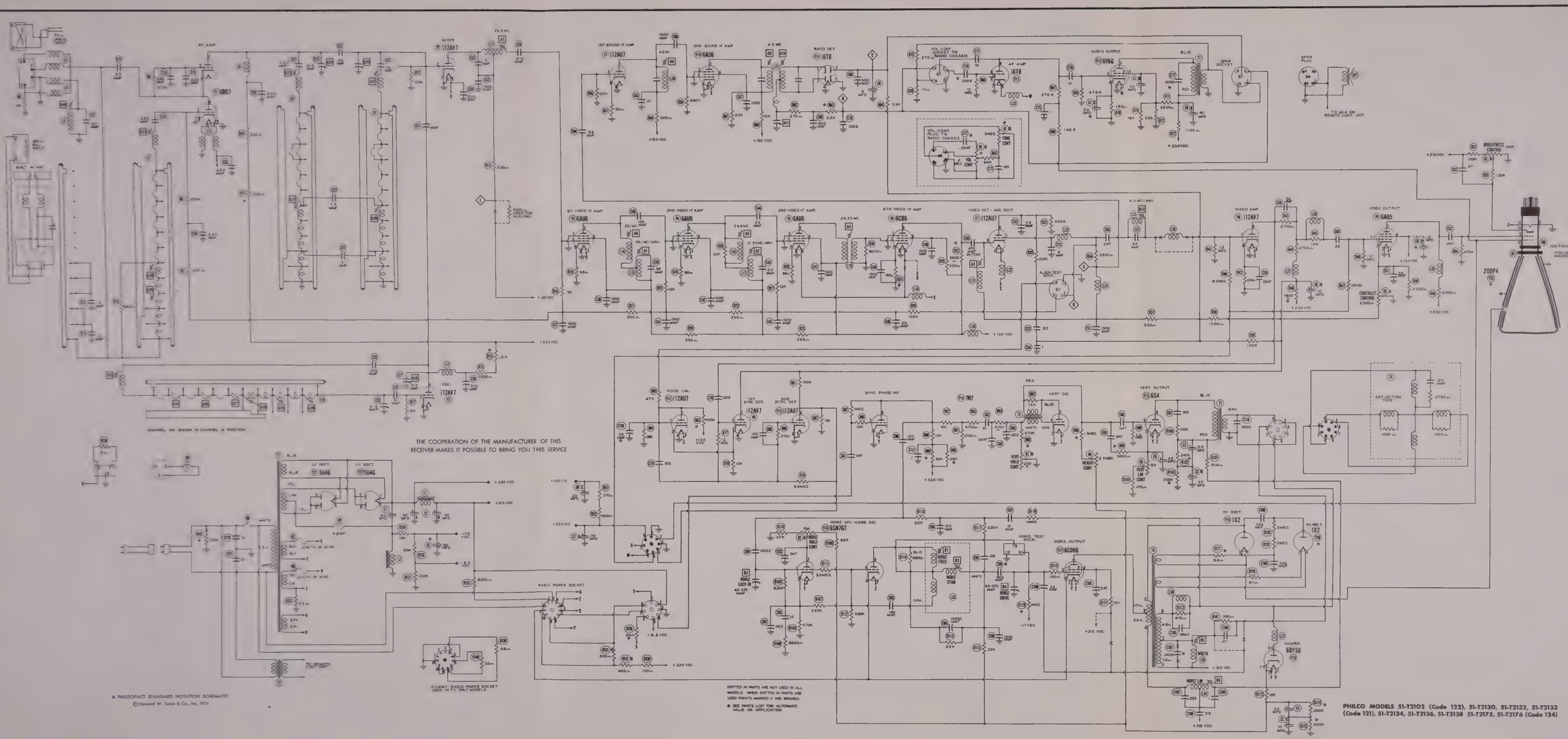
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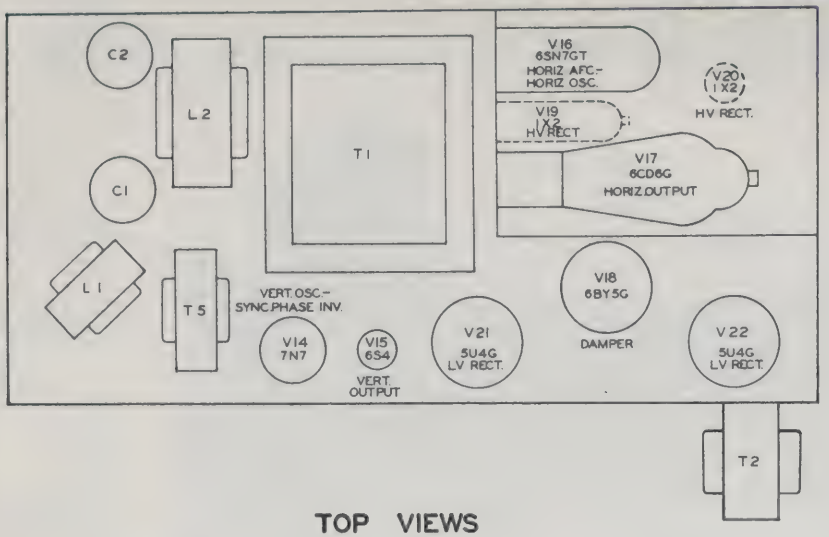
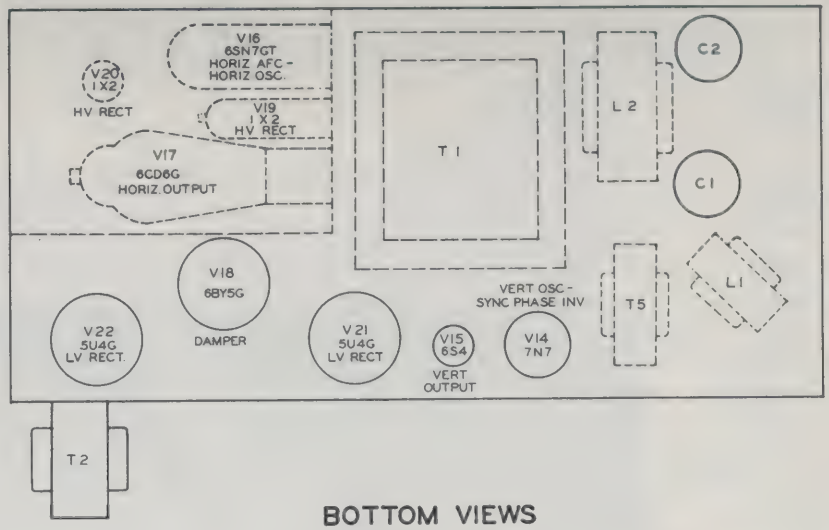
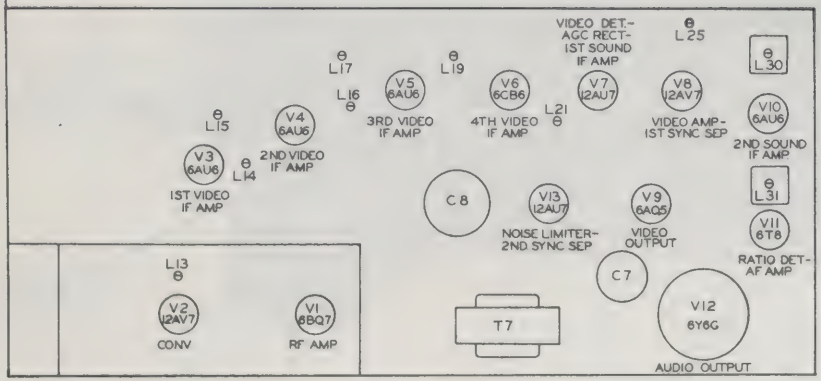
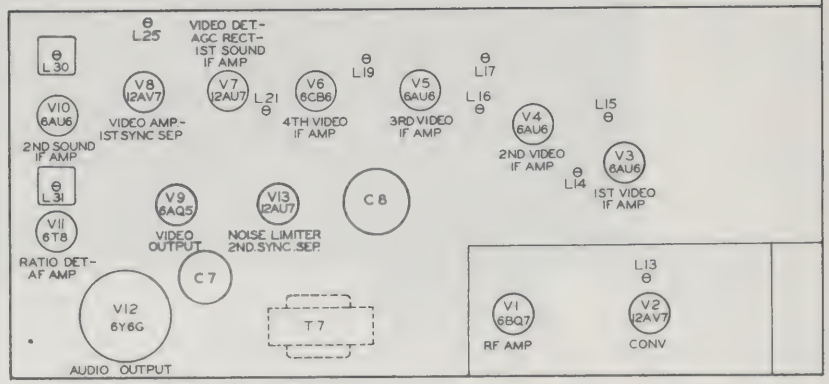


TOP VIEWS



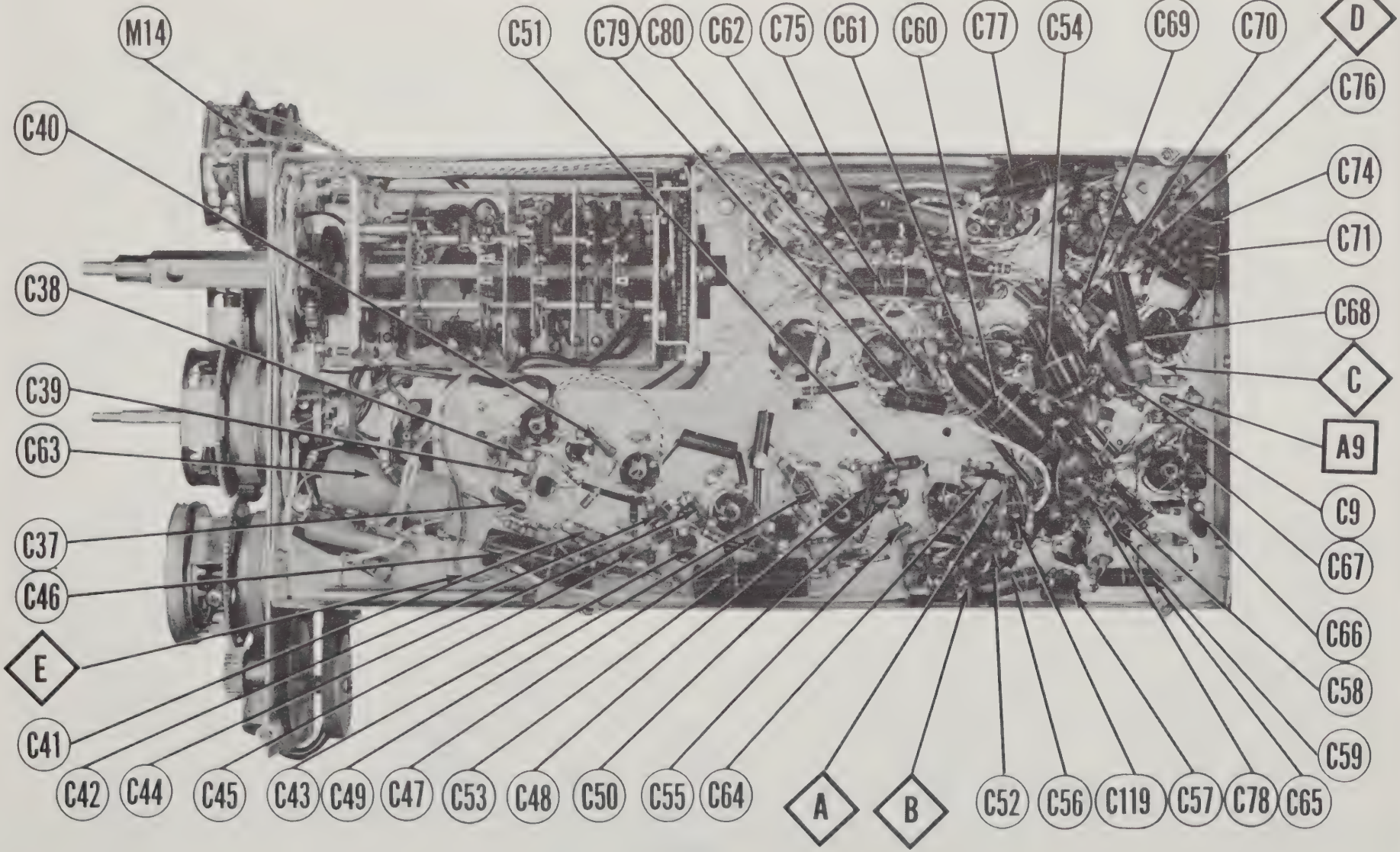
BOTTOM VIEWS





TUBE PLACEMENT CHART

PHILCO MODELS 51-T2102 (Code 122), 51-T2130, 51-T2132, 51-T2133 (Code 121), 51-T2134, 51-T2136, 51-T2138, 51-T2175, 51-T2176 (Code 124)



RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

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RF-IF CHASSIS-TOP VIEW

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

All interconnecting cables should be in place before attempting alignment.
The end of the high voltage lead should be securely taped and kept away from the chassis.
Turn the function selector switch on the radio to "TV" (maximum clockwise).

VIDEO IF ALIGNMENT

Remove the converter tube and replace it with a 12AV7 which has pin 6 removed. This will disable the local oscillator and eliminate the possibility of erroneous indications. Pre-set A1 and A2 to fully counter-clockwise.
Connect the negative lead of a 3 volt battery to the junction of R36 and C53 positive to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	28.1MC (Unmod.)	Any	DC probe to Point (A). Common to Point (B).	A1	Adjust for MINIMUM deflection.
2.	"	"	21.85MC	"	"	A2	"
3.	"	"	24.75MC	"	"	A3	Adjust for maximum deflection. Attenuate signal generator to maintain 2 volt reading.
4.	"	"	26.25MC	"	"	A4	"
5.	"	"	26.6MC	"	"	A5	"
6.	"	"	23.1MC	"	"	A6	"
7.	"	"	23.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	22.5MC 26.6MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A3 thru A7 for proper response. If an adjustment requires considerable change, repeat VTVM alignment.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	2200Ω carbon resistors	High side thru 2200Ω to Point A. Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (C). Low side to chassis.	A8, A9	Disconnect stabilizer capacitor C9. Adjust for maximum amplitude and symmetry as per figure 2.
10.	"	"	"	"	"	Vert. amp. to Point (D). Low side to chassis.	A10, A11	Reconnect capacitor C9. Adjust A10 and A-11 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.
11.	After alignment is completed, tune in a local TV station and slightly retouch A10 and A-11 for MINIMUM intercarries buzz.							

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	2200Ω carbon resistor	High side thru 2200Ω to Point A. Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. amp. to Pin 2 of picture tube. Low side to chassis.	A12	Adjust for MINIMUM 400% indication on scope.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 12AV7 in its socket.
Turn the fine tuning control to the mid-position of its range, (stop on cam centered on channel 6 oscillator adjustment screw).
Reduce the bias used during video IF alignment to 1.5 volts.
Starting with channel 13 every other oscillator coil is adjustable, therefore, it is possible to set the oscillator exactly on frequency for either of two adjacent channels, that is, 13 or 12, 11 or 10, 9 or 8 etc.
Since the coils are in series, it is essential that alignment be started with the highest channel to be aligned and progress towards the lowest frequecny channel.
Connect a 3300Ω resistor in series with the red lead coming out of the tuner. The tuner end of the resistor is alignment Point E, to which the oscilloscope is connected.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	237.85MC or 221.85MC	13 or 12	Vert. amp. to Point (E) (See note above). Low side to chassis.	A13	Adjust for zero beat indication on scope. This will be indicated by a narrow trace between two wide traces.
			225.85MC or 219.85MC	11 or 10		A14	
			213.85MC	9		A15	
14.	"	"	207.85MC	8		A16	Check the oscilloscope frequency on channel 8. If the frequency is high turn A16 clockwise. If frequency is low turn A16 counter clockwise. Repeat steps 13 and 14 until oscillator frequency is correct on all channels.
15.	"	"	201.85MC	7	"	A17	Adjust for zero neat as in step 13.
			109.85MC	6		A18	
			103.85MC or 93.85MC	5 or 4		A19	
			87.85MC or 81.85MC	3 or 2		A20	

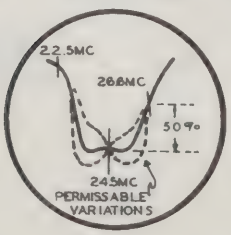


FIG. 1

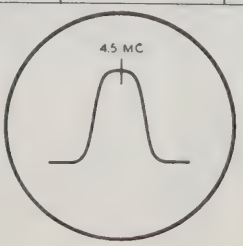


FIG. 2

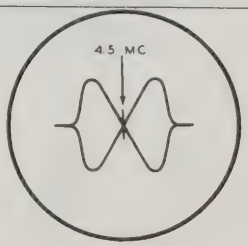


FIG. 3

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

Unsolder the white lead from the tuner and connect the negative lead of a 1.5 volt battery to the wire; positive to chassis.
Connect a 330Ω resistor between the green lead from the tuner and chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	213MC	13	Vert. amp. to Point E . Low side to chassis.	A21, A22 A23	Detune A21 until a single peak appears. Adjust A22 until 213MC marker occurs at center of single peak. Adjust A23 for maximum amplitude and symmetry of single peak.
17.	"	"	"	211.25MC 213MC 215.75MC	"	"	A21, A22	Readjust A21 and A22 for response curve similar to figure 4.
18.	"	"	177MC (10MC SWP)	175.25MC 177MC 179.75MC	7	"	A24, A25	Examine response curve for center frequency and tilt. If the response is tilted, adjust A24 and A25 until response is a mirror image of the original. This is necessary to compensate the effects of the channel 13 adjustments. See figures 5A and 5B for example of compensated response curve. Repeat steps 16, 17 and 18 until proper response is obtained on both channels 7 and 13.
19.	"	"	85MC (10MC SWP)	85MC	6	"	A26, A27, A28	Detune A26 until a single peak appears. Caution: do not turn A26 excessivly or slug will fall out of the coil. Adjust A27 so 85MC falls at center of single peak. Adjust A28 for maximum amplitude of single peak.
20.	"	"	"	83.25MC 85MC 87.75MC	"	"	A26, A27	Readjust A26 and A27 for response curve similar to figure 4.
21.	"	"	69MC (10MC SWP)	67.25MC 71.75MC	4	"	A29	Adjust for maximum amplitude and symmetry of response curve.

FM TRAP ADJUSTMENT

The FM trap (A46) has been pre-set at the factory to eliminate 100MC interference. If interference is noted from another frequency FM station, A46 may be adjusted to reduce the interference, otherwise no adjustment should be required .

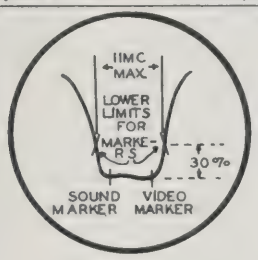


FIG.4

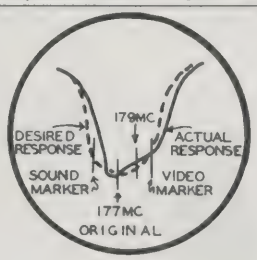


FIG.5A

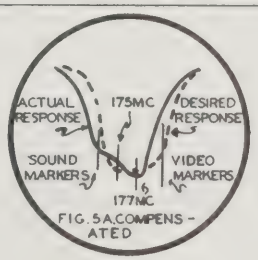
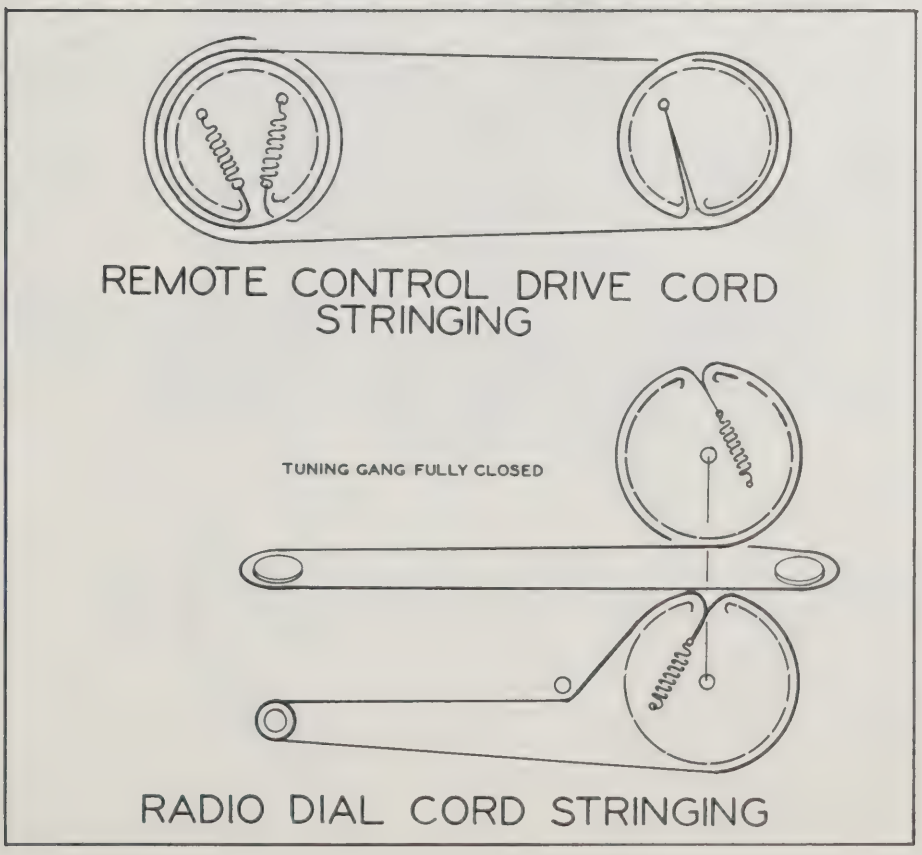


FIG.5B



PROPERTY OF
L. F. BLANKENSHIP
4674 MEADE ST.
DENVER, COLORADO

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to the last reference mark at the left hand end of the pointer carriage slide.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
22.	.1MFD	High side to Pin 7 (grid) of 12AT7 (V25). Low side to chassis.	455KC (400 ∿ Mod.)	AM (second pos. CW)	Tuning gang fully open.	Across voice coil.	A30, A31, A32, A33	Adjust for maximum output.
23.	"	High side to ungrounded pin on loop antenna socket. Low side to chassis.	1620KC	"	Set pointer to index mark on right hand end of pointer carriage slide.	"	A34	"
24.	"	"	1500KC	"	Tune for max. output.	"	A35	Adjust for maximum output. Make final adjustment of A35 after set is returned to cabinet, with signal generator connected to a loop to radiate signal into receiver loop.
	Step 25 should be preformed only after antenna coil replacement.							
25.	"	"	580KC	"	Tune for max. output.	"	A36	Rock tuning gang while adjusting A36 for max. output. Repeat steps 24 and 25 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point F to chassis. The junction of these two resistors is alignment Point ⟨H⟩ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
26.	.1MFD	High side to Pin 7 (grid) of 12AT7 (V25). Low side to chassis.	9.1MC (Unmod.)	FM (Third pos. CW)	Tuning gang fully closed.	DC probe to Point ⟨F⟩. Common to chassis.	A37, A38, A39, A40, A41	Adjust for maximum deflection.
27.	"	"	"	"	"	DC probe to Point ⟨G⟩. Common to Point ⟨H⟩	A42	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Continue with step 29.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
26.	.1MFD	High side to Pin 1 (grid) of 6BA6 (V26). Low side to chassis.	9.1MC (450KC SWP)	FM (Third pos. CW)	Tuning gang fully closed.	Vert. amp. to Point ⟨F⟩. Low side to chassis.	A37, A38, A39	Disconnect stabilizer capacitor C120. Adjust for maximum amplitude and symmetry as per figure 7.
27.	"	High side to Pin 7 (grid) of 12AT7 (V25). Low side to chassis.	"	"	"	"	A40, A41	"
28.	"	"	"	"	"	Vert. amp. to Point ⟨G⟩. Low side to chassis.	A42	Reconnect capacitor C120. Adjust A42 so 9.1 MC occurs at center of crossover lines as per figure 8. SLIGHTLY retouch A37 for max. amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
29.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	108MC (Unmod.)	FM	Set pointer 7 7/8 inches to the right of the left hand edge of the left hand backplate support.	DC probe to Point ⟨F⟩. Common to chassis.	A43, A44 A45	Adjust for maximum deflection.
30.	"	"	92MC	"	Set pointer 3 15/16 inches to right of the backplate support edge.	"	L42, L41, L38	Check coils with a tuning wand and if necessary expand or compress coil turns for maximum deflection. If coils are altered repeat steps 29 and 30 until no further improvement can be made.

FIG. 7

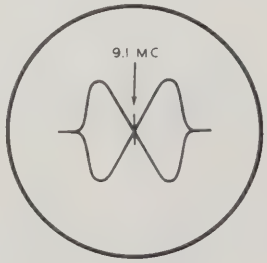


FIG. 8

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

RF-IF CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATON

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	220VDC	5.6VDC	110VDC	6.3VAC	0V	110VDC	-.9VDC	0V	0V
V 2	12AV7	135VDC	-1.5VDC	0V	0V	0V	100VDC	‡-7VDC	0V	6.3VAC
V 3	6AU6	.3VDC	0V	0V	6.3VAC	120VDC	120VDC	.7VDC		
V 4	6AU6	.3VDC	0V	0V	6.3VAC	125VDC	125VDC	.7VDC		
V 5	6AU6	.3VDC	0V	0V	6.3VAC	130VDC	130VDC	.7VDC		
V 6	6CB6	0V	1.8VDC	0V	6.3VAC	90VDC	125VDC	0V		
V 7	12AU7	120VDC	0V	1.7VDC	6.3VAC	6.3VAC	-.4VDC	.3VDC	1.2VDC	0V
V 8	12AV7	175VDC	0V	9.4VDC	0V	0V	130VDC	-.2VDC	.8VDC	6.3VAC
V 9	6AQ5	-1VDC	7.8VDC	0V	6.3VAC	230VDC	130VDC	-1VDC		
V 10	6AU6	-.6VDC	0V	0V	6.3VAC	65VDC	65VDC	0V		
V 11	6T8	-.8VDC	1.8VDC	-.8VDC	0V	6VAC	0V	0V	-.6VDC	80VDC
V 12	6Y6G	0V	6VAC	160VDC	110VDC	0V	235VDC	0V	9.8VDC	
V 13	12AU7	9.8VDC	9.8VDC	9.6VDC	0V	0V	20VDC	-.4VDC	0V	6.3VAC
V 14	7N7	0V	0V	170VDC 85VDC	-15VDC -28VDC	-.4VDC	45VDC	0V	6.3VAC	
V 15	6S4	0V	45VDC 12VDC	0V	0V	6.3VAC	0V	0V	0V	470VDC 340VDC
V 16	6SN7GT	-3.2VDC	90VDC	-30VDC	-75VDC	305VDC	0V	0V	6.3VAC	
V 17	6CD6G	0V	6.3VAC	0V	-27VDC	-27VDC	320VDC	0V	125VDC	TOP CAP *
V 18	6BY5G	525VDC	525VDC	0V	310VDC	310VDC	0V	525VDC	525VDC	
V 19	1X2	*	DO NOT MEASURE							
V 20	1X2	*	DO NOT MEASURE							
V 21	5U4G	0V	320VDC	480VDC	300VAC	0V	300VAC	0V	320VDC	
V 22	5U4G	0V	320VDC	0V	300VAC	0V	300VAC	0V	320VDC	
V 23	20DP4	0V	0V	PIN 10 315VDC	PIN 11 80VDC	PIN 12 6.3VAC				

FUNCTION SWITCH IN TV POSITION
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
‡ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE

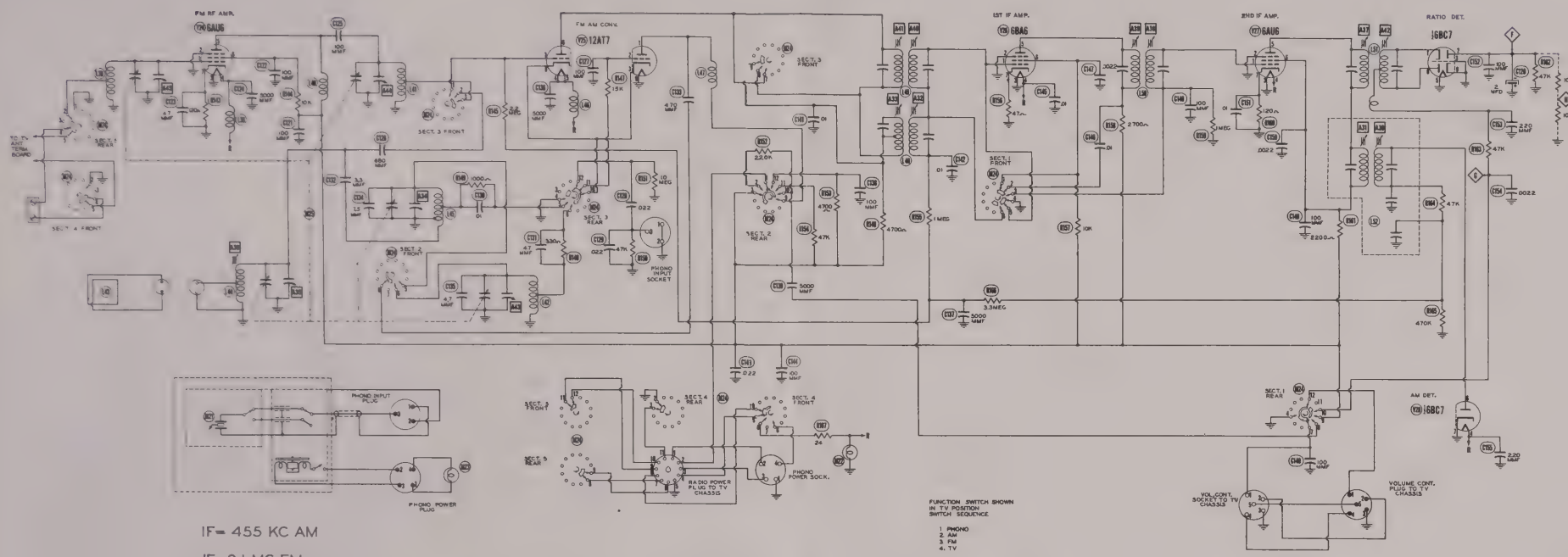
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	†1.8KΩ	Inf.	Inf.	.2Ω	.1Ω	Inf.	1Meg	0Ω	0Ω
V 2	12AV7	†2.4KΩ	100KΩ	0Ω	0Ω	0Ω	†15KΩ	10KΩ	0Ω	.1Ω
V 3	6AU6	550KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	68Ω		
V 4	6AU6	545KΩ	0Ω	0Ω	.1Ω	†2.4KΩ	†2.4KΩ	68Ω		
V 5	6AU6	545KΩ	0Ω	0Ω	.2Ω	†2.1KΩ	†2.1KΩ	68Ω		
V 6	6CB6	.2Ω	180Ω	0Ω	.2Ω	†7.7KΩ	†2.4KΩ	0Ω		
V 7	12AU7	†3KΩ	120KΩ	150Ω	.2Ω	.2Ω	330KΩ	4.6KΩ	1.3KΩ	0Ω
V 8	12AV7	†5.2KΩ	8Meg	10KΩ	0Ω	0Ω	†11KΩ	1.2Meg	100Ω	.1Ω
V 9	6AQ5	750KΩ	1.2KΩ	0Ω	.1Ω	†2.7KΩ	†2.1KΩ	750KΩ		
V 10	6AU6	680KΩ	0Ω	0Ω	.1Ω	†9KΩ	†9KΩ	0Ω		
V 11	6T8	Inf.	34KΩ	Inf.	0Ω	.4Ω	Inf.	0Ω	10Meg	†370KΩ
V 12	6Y6G	Inf.	.3Ω	†1.8KΩ	†6KΩ	470KΩ	†500Ω	0Ω	180Ω	
V 13	12AU7	35KΩ	35KΩ	10KΩ	0Ω	0Ω	†18KΩ	7Meg	0Ω	.1Ω
V 14	7N7	0Ω	0Ω	#1.5Meg # 4Meg	520KΩ	†1Meg	†15KΩ	0Ω	.1Ω	
V 15	6S4	Inf.	5.5KΩ 470Ω	2.2Meg	0Ω	.1Ω	2.2Meg	Inf.	Inf.	#5.7Meg
V 16	6SN7GT	1Meg	†45KΩ	330KΩ	340KΩ	#50KΩ	0Ω	0Ω	.1Ω	
V 17	6CD6G	Inf.	.1Ω	0Ω	1Meg	1Meg	#50KΩ	0Ω	†12KΩ	TOP CAP #33Ω
V 18	6BY5G	100KΩ	#.1Ω	Inf.	†80Ω	†80Ω	Inf.	100KΩ	100KΩ	
V 19	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #160Ω
V 20	1X2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP Inf.
V 21	5U4G	Inf.	8KΩ	#5KΩ	62Ω	Inf.	62Ω	Inf.	8KΩ	
V 22	5U4G	Inf.	8KΩ	Inf.	62Ω	Inf.	62Ω	Inf.	8KΩ	
V 23	20DP4	0Ω	470KΩ	PIN 10 †64Ω	PIN 11 180KΩ	PIN 12 .1Ω				

FUNCTION SWITCH IN TV POSITION
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V22
# MEASURED FROM PIN 8 OF V18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



IF= 455 KC AM

IF=9.1 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V74	6AU6	0V	0V	0V	5.8VAC	105VDC ±140VDC	195VDC ±195VDC	1.2VDC		
V75	12AT7	108VDC ±80VDC	11.5VDC ±1.5VDC	11.5VDC ±2.4VDC	5.8VAC	5.8VAC ±2.4VDC	110VDC ±125VDC	1.0V +,-.4VDC	11.8VDC ±3.4VDC	0V
V76	6BA6	0V -.1VDC	0V	0V	5.8VAC	195VDC ±195VDC	195VDC ±195VDC	5VDC		
V77	6AU6	0V	0V	0V	5.8VAC	110VDC ±105VDC	110VDC ±115VDC	1.2VDC		
V78	6BC7	-.5VDC	-1VDC	0V	5.8VAC	0V	-.5VDC	0V	-.5VDC	0V

† MEASURED FROM PIN 9 OF V75

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V74	6AU6	80 115KΩ ±150KΩ	80 1.15KΩ ±.15KΩ	80 115KΩ ±1KΩ	60	16.3KΩ	114KΩ	130Ω 1.8Ω ± 6.5Meg	115KΩ ± 1KΩ	00
V75	12AT7	55.15Meg ±.5.5Meg	00	00	80	114KΩ	470			
V76	6BA6	55.15 ±.15Meg	00	00	80	114KΩ	470			
V77	6AU6	∞.15Meg	00	60	80	16.3KΩ	114KΩ ±.5KΩ	130Ω 1.8Ω		
V78	6BC7	Inf.	470KΩ	60	80	00	114KΩ ±120KΩ	00	Inf.	80

† TAKEN WITH VACUUM TUBE VOLTMETER

FUNCTION SWITCH IN EITHER FM OR AM POSITION
† TAKEN IN FM POSITION
‡ TAKEN IN AM POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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132-10

RADIO SCHEMATIC

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	12AV7	12AV7	9A	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6CB6	6CB6	6CK	
V7	AGC Rectifier-Video Detector - 1st Sound IF Amp.	12AU7	12AU7	9A	
V8	Video Amplifier - 1st Sync. Sep.	12AV7	12AV7	9A	
V9	Video Output	6AQ5	6AQ5	7BZ	
V10	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector - AF Amplifier	6T8	6T8	9E	
V12	Audio Output	6Y6G	6Y6G	7AC	
V13	2nd Sync. Sep. - Noise Limiter	12AU7	12AU7	9A	
V14	Vert. Oscillator - Sync. Phase Inv.	7N7	7N7	8AC	
V15	Vert. Output	6S4	6S4	9AC	
V16	Horiz. AFC - Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6CD6G	6CD6G	5BT	
V18	Damper	6BY5G	6BY5G	6CN	
V19	H.V. Rectifier	1X2	1X2	7CB	
V20A	H.V. Rectifier	1X2	1X2	7CB	
B	H.V. Rectifier	1B3GT	1B3GT	3C	
V21	L.V. Rectifier	5U4G	5U4G	5T	
V22	L.V. Rectifier	5U4G	5U4G	5T	
V23A	Picture Tube	20DP4	20DP4	12D	
B	Picture Tube	20DP4A	20DP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	40	475	30-2568-48	E4A100		UPT4045		TVL-1820	Filter
C2A	50	475	30-2584-3	AF1062X4G		UPT53150-			▲ Filter
B	30	475				230			■ Filter
C	10	475							▲ Decoupling
D	20	300							Vert. Output Dec.
C3	20	300	30-2417-18	PRS350/24		BR2035A		TVA-1608	Vert. Output Dec.
C4	20	300	30-2417-18						Decoupling
C5	50	25	30-2417-8	PRS25/50		BR502A		TVA-1206	Bias Filter *
C6	25	25	30-2417-9						Vert. Output Cathode
C7A	30	450	30-2570-73	AFH6J10I8A		UPT345-		TVL-3723	■ Filter
B	40	350				435C5			▲ Output Screen
C	50	25							Output Cathode †
C8A	40	450	30-2570-41	AF8422J		UPT42145		TVL-4840	▲ Output Decoupling
B	10	450							■ Decoupling
C	20	450							▲ Decoupling
D	10	450							Decoupling ‡
C9	2	50	30-2417-7	E26E6		BB2-50T		TVA-1301	Stabilizing Cap
C10	30	30VAC @ 60~	30-2355-3	E62A2					Motor Capacitor
C11	20		62-020309011	SI20	D6-200		GP1K-20		Fixed Trimmer
C12	5		30-1221-13	SI15NPO	TCZ-4.7		NPOK-5		Fixed Padder
C13	10		62-01040900l	SI10	D6-100		GP1K-10	19C19	Fixed Padder
C14	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Coupling
C15	3.3		30-1221-9	SI3.3NPO	TCZ-3.3		NPOK-3.3		Neutralizing
C16	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	AGC Filter
C17	.5-3		31-6520-1		829-3				Variable Trimmer
C18	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Amp. Grid
C19	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Amp. Grid
C20	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Amp. Plate Dec.
C21	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	RF Coupling
C22	.56		30-1221-16						RF Coupling
C23	1.5		30-1221-8	SI1.5NPO	TCZ-1.5		NPOK-1.5		RF Coupling
C24	5		30-1221-13	SI5NPO	TCZ-4.7		NPOK-5		RF Coupling
C25	33		62-033009001l	SI33	D6-330		GP1K-33	19C24	RF Coupling
C26	.5-3		31-6520-1		829-3				Variable Trimmer
C27	.5-3		31-6520-1		829-3				Variable Trimmer
C28	10		30-1224-48	SI10N750	TCN-10		N750K-10	19C4	Osc. Grid Cap
C29	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	Osc. Feedback
C30	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	Osc. Plate Dec.
C31	1		30-1224-71		TCZ-1				Osc. Coupling
C32	1500		30-1225-19	SI1500	D6-152		GP2L-0015	29C8	Conv. Plate Dec.
C33	15		62-015409011	SI15	D6-150		GP1K-15	19C22	Fixed Trimmer
C34	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	Conv. Filament
C35	220		30-1225-11	SI220	D6-221		GP2K-220	19C13	Filament Bypass
C36	470		62-147001001	SI470	D6-471		GP2K-470	19C15	IF Coupling
C37	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C38	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st V. IF Dec.
C39	39		62-039409011	SI39	D6-390	5W5Q4	GP1K-39	MS-44	Fixed Trimmer
C40	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C41	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C42	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd V. IF Dec.
C43	22		62-022009001	SI22	D6-220		GP1K-22	19C23	Fixed Trimmer
C44	33		62-033000011	SI33	D6-330	5W5Q4	GP1K-33	19C24	IF Coupling
C45	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C46	.22	200	45-3505-49	P488-22		GT2P25		2TM-P22	AGC Filter
C47	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	3rd V. IF Dec.
C48	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Screen
C49	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th V. IF Cathode
C50	470		62-147001001	SI470	D6-471	5W5T5	GP2K-470	19C15	IF Coupling
C51	1500		62-215001011	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C52	56		62-056409001	SI56	D6-560	5W5Q5	GP1K-56	19C28	AGC Rect. Plate
C53	.22	200	45-3505-49	P488-22		GT2P25		2TM-P22	AGC Filter
C54	.1	200	45-3505-47	P288-1	DF-104	PTE4P1		2TM-P1	RF Bypass
C55	8		30-1224-13	SI8.2NPO	D6-100	5W5Q1	NPOK-8.2	19C3	V. Diode Filter
C56	.047	200	45-3505-62	P288-047	DF-503	PTE4S5		2TM-S47	Video Coupling

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C57	68		62-06840901‡	SI68	D6-680	5W5Q7	GP1K-68	19C10	Fixed Trimmer
C58	56		62-05640900‡	SI56	D6-560	5W5Q5	GP1K-56	19C28	Peaking
C59	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Video Amp. Cathode
C60	.22	400	45-3505-48	P488-22		GT4P25		4TM-P22	Video Coupling
C61	56		62-05640900‡	SI56	D6-560	5W5Q5	GP1K-56	19C28	V. Output Cathode
C62	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C63	.47	400	45-3500-4	484-5		GT4P5		4TM-5	Pic. Tube Cathode
C64	56		62-05640900‡	SI56	D6-560	5W5Q5	GP1K-56	19C28	S. IF Coupling
C65	.01	400	45-3505-58	P488-01	D6-103	PTE4S1		821-01	4TM-S1 1st S. IF Dec.
C66	1500		62-21500101‡	SI1500	D6-152	1W5D15	GP2L-0015	29C8	S. IF Coupling
C67	.0033	400	45-3505-55	P688-0033	D6-332	PTE6D3	GP2M-0033	6TM-D33	2nd S. IF Dec.
C68	330		60-10335407	SI330	D6-331	5W5T3	GP2K-330	19C14	RF Bypass
C69	1500		62-21500101‡	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C70	.0022	400	45-3505-54	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	De-emphasis
C71	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Tone Comp.
C72	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Audio Coupling * *
C73	.015	200	45-3505-59	P288-015		PTE6S15		6TM-S15	Tone Comp.
C74	.0068	400	45-3505-52	P488-0068	D6-682	PTE6D6	821-01	6TM-D68	Audio Coupling §
C75	.1	400	45-3505-64	P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Dec.
C76	.01	400	45-3505-57	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C77	.0068	1000		P1068-0068		PTE16D7		MB-D68	Output Plate •
C78	.022	400	45-3505-60	P488-022	DF-203	PTE4S2		4TM-S22	Sync. Coupling
C79	.015	200	45-3505-59	P288-015		PTE6S15		6TM-S15	Sync. Coupling
C80	180	500	30-1224-5	1469-0002	D6-181	5R5T2	GP2K-180	MS-32	Sync. Coupling
C81	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C82	.01	400	45-3505-58	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. Sync. Coupling
C83	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Network
C84	.022	200	45-3505-60	P488-022	DF-203	PTE4S2		4TM-S22	Integrator Network
C85	.047	400	45-3505-62	P488-047		PTE4S5		4TM-S47	Vertical Discharge
C86	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Vert. Sweep Coupling
C87	.015	400	45-3505-59	P488-015		PTE6S15		6TM-S15	Vertical Shaping
C88	120	500	60-10125237	1469-00015	D6-121	5R5T15	GP2K-120	MS-315	Horiz. Sync. Coupling
C89	.0022	400	45-3505-54	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Horiz. Sync. Coupling
C90	.15	200	45-3505-48	P288-15				2TM-P15	AFC Filter
C91	*.022	200	45-3505-43	P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C92	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. AFC Plate
C93	180	1000	30-1244-5	1469-HV-0002					Horiz. Osc. Grid
C94	10000	500	60-30103404	1467-01		1D3S1		1FM-11	Fixed Trimmer
C95	.001	600	45-3505-52	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Horiz. Sweep Coupling
C96	150	500	60-10155407	1468-00015	D6-152	5W5T15	GP2K-150	1FM-315	Voltage Divider
C97	10	500	30-1244	1468-00001	D6-100	5W5T1	GP1K-10	1FM-41	Horiz. Feedback
C98	1200	500	60-20125404						Horiz. Discharge
C99	390	500		1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Horiz. Sweep Coupling ¶
C100	33	1000	30-1244-6						Horiz. Feedback
C101	.047	400	45-3505-62	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. Output Screen
C102	.033	400	45-3505-61	P488-033		PTE6S3		6TM-S3	Damper Filter
C103	.1	400	45-3505-64	P488-1		PTE4P1		4TM-P1	Damper Filter
C104	.22	400	45-3505-49	P488-22		GP4P25		4TM-P22	Damper Filter
C105	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Fixed Trimmer
C106	.47	200	45-3505-34	P288-47		GT2P5		2TM-P47	Horiz. Sweep Coupling
C107	.0033	600		P688-0033	D6-332	PTE6D3	GP2M-0033	6TM-D33	Fixed Trimmer #
C108	500	10000	30-1229-5	HV10C	TV3-501				Voltage Doubler Cap
C109	500	20000	30-1229-6	HV20C	TV3-502				H.V. Filter
C110	.01	600	30-1226-1	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter
C111	.01	600	30-1226-1	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter
C112	.1	400	45-3505-47	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C113	.1	200	30-4634	P288-1	DF-104	PTE4P1		2TM-P1	Damping
C114	.1	200	30-4634	P288-1	DF-104	PTE4P1		2TM-P1	Damping
C115	.1	200	30-4634	P288-1	DF-104	PTE4P1		2TM-P1	Damping
C116	.1	200	30-4634	P288-1	DF-104	PTE4P1		2TM-P1	Damping
C117	.1	200	30-4634	P288-1	DF-104	PTE4P1		2TM-P1	Damping
C118	.0033	400		P688-0033	D6-332	PTE6D3	GP2M-0033	6TM-D33	Fixed Trimmer
C119	33			SI33	D6-330	5W5Q3	GP1K-33	19C24	RF Bypass #

* Some models use 10MFD in this application.
† Some models use section C8D in this application and section C7C is not used.
‡ Some models use this section in the application of C7C.
§ Some models use .001MFD in this application.
• Some models use .022MFD in this application.
Not used in all models.
¶ Some models use 220MMF in this application. Mfgrs. part # 60-10225417.
* * Some models use .01MFD in this application.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2Meg	1/2	▪33-5563-37	Concentrikit B18-139X ▲	RTV-263		Volume Control - Tapped @ 1Meg - Front
B	5 Meg	1/2		B12-114 ▲			Tone Control - Rear
C	Shaft End			E-187 ▲			Attach Per Instructions in "Concentrikit"
R2A	75KΩ	1/2	33-5563-35		RTV-262		Horizontal Hold Control - Front
B	250KΩ	1/2					Vertical Hold Control - Rear
R3A	2500Ω	2	33-5563-33		RTV-261		Contrast Control - Wire Wound - Front - See Note 1.
B	100KΩ	1/2					Brightness Control - Rear
R4A	2.5Meg	1/2	33-5565-10	Q11-239	AM-84-S	AN-83	Height Control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R4A Per Instructions
R5	5000Ω	2	33-5546-10	W-5000 ø	43-5000 ø	VK-135	Vertical Linearity Control

▪ 33-5563-36 is mgfr. part number for models 51T2134, 51T2136 and 51T2175.
ø Fashion shaft to duplicate original.
Note 1. When replacing, use original parts including nut bushing.
▲ Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R6	10KΩ	1/2	66-3108340	BTS-10K	Antenna Matching
R7	330Ω 20%	1/2	66-1338340	BTS-330	AGC Network
R8	470KΩ 20%	1/2	66-4478340		RF Amp. Grid
R9	470KΩ 20%	1/2	66-4478340		RF Amp. Grid
R10	330Ω 20%	1/2	66-1338340	BTS-330	RF Amp. Plate Decoupling
R11	1000Ω 20%	1		BTA-1000	RF Amp. Plate Decoupling - See Note 2
R12	100KΩ	1/2	66-4108340		Mixer Grid

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TV PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R13	330Ω 20%	1	66-1338340	BTS-330	Mixer Decoupling
R14	6800Ω	1	66-2688340	BTS-6800	Antenna Coil Shunt
R15	2200Ω 20%	1	66-2228340	BTS 2200	Osc. Plate Decoupling
R16	12KΩ	2			Osc. Plate Decoupling - See Note 3
R17	10KΩ	1	66-3108340		Osc. Grid
R18	15KΩ		66-3158340		1st Video IF Amp. Grid
R19	68Ω		66-0688340		1st Video IF Amp. Cathode
R20	330Ω		66-1338340	BTS 330	1st Video IF Amp. Decoupling
R21	330Ω		66-1338340	BTS-330	AGC Network
R22	330Ω		66-1338340	BTS 330	AGC Network
R23	12KΩ		66-3128340		2nd Video IF Amp. Grid
R24	68Ω		66-0688340		2nd Video IF Amp. Cathode
R25	330Ω		66-1338340	BTS-330	Decoupling
R26	33KΩ		66-3338340		3rd Video IF Transformer Shunt
R27	12KΩ		66-3128340		3rd Video IF Amp. Grid
R28	68Ω		66-0688340		3rd Video IF Amp. Cathode
R29	330Ω		66-1338340	BTS-330	3rd Video IF Amp. Screen
R30	8200Ω		66-2828340		4th Video IF Transformer Shunt
R31	180Ω		66-1188340	BTS-180	4th Video IF Amp. Cathode - See Note 4
R32	5600Ω	1			4th Video IF Amp. Plate - See Note 5
R33	330KΩ		66-4338340	BTS-330K	Video Det. Diode Load
R34	3300Ω		66-2338340	BTS-3300	Video Det. Diode Load
R35	100KΩ		66-4108340	BTS 100K	AGC Network
R36	100KΩ		66-4108340	BTS 100K	AGC Network
R37	330Ω		66-1338340	BTS-330	Isolation
R38	680Ω		66-0688340	BTS 680	Voltage Divider
R39	150KΩ		66-4158340	BTS-150K	Voltage Divider
R40	8.2Meg 20%	1	66-5828340	BTS-8.2Meg	Bias Network
R41	1.2Meg 20%	1	66-5128340	BTS-1.2Meg	Video Amp. Grid
R42	100Ω		66-1008340	BTS-100	Video Amp. Cathode
R43	2700Ω		66-2718340	BTS-2700	Video Amp. Plate
R44	2700Ω		66-2718340	BTS-2700	Video Amp. Plate
R45	10KΩ		66-4108340	BTS-10K	Video Peaking Coil Shunt
R46	4700Ω	1	66-2474340	BTS-4700	Decoupling - See Note 16
R47	1.8Meg 20%	1	66-5184340	BTS-1.8Meg	Bias Network
R48	1.2Meg 20%	1	66-5128340	BTS-1.2Meg	Video Output Grid
R49	2200Ω	5	33-1335-97	1 3/4A-2250	Video Output Plate - Wire Wound
R50	2200Ω	1	76-2228340	BTS-220Ω	Contrast Control Shunt
R51	270Ω	2	66-1275340	BW-2-270	Decoupling - Wire Wound
R52	1300Ω	10	33-3435-31	1 3/4A-1250	Decoupling - Wire Wound
R53	100KΩ		66-4108340	BTS-100K	Voltage Divider
R54	470KΩ		66-4478340	BTS-470K	Picture Tube Grid
R55	150KΩ		66-4158340	BTS-150K	Picture Tube Cathode
R56	120KΩ		66-4128340	BTS-120K	1st Sound IF Amp. Grid
R57	150Ω		66-1158340	BTS-150	1st Sound IF Amp. Cathode
R58	1000Ω		66-2108340	BTS-1000	1st Sound IF Amp. Decoupling
R59	68KΩ		66-4688340	BTS-68K	2nd Sound IF Amp. Grid
R60	12KΩ	1	66-3128340	BTA-12K	2nd Sound IF Amp. Decoupling
R61	22KΩ		66-3228340	BTA-22K	Voltage Divider
R62	270Ω		66-1278340	BTS-270	Balancing
R63	51KΩ			BTS-47K	De-emphasis - See Note 6
R64	33KΩ		66-3338340	BTS-33K	AVC Network
R65	68KΩ		66-4688340	BTS 68K	Tone Compensation
R66	10Meg		66-5108340	BTS-10Meg	AF Amp. Grid
R67	270KΩ		66-4278340	BTS-270K	AF Amp. Plate
R68	100KΩ		66-4108340	BTS-100K	AF Amp. Plate Decoupling
R69	470KΩ	1	66-4478340	BTS-470K	Output Grid
R70	180Ω	2	66-1808340	BW-2-180	Output Cathode - Wire Wound
R71	5600Ω	2	66-2565340	BW-2-5600	Output Screen - Wire Wound
R72	1100Ω	10	33-3435-33	1 3/4A-1100	Output Decoupling - Wire Wound
R73	33KΩ	1	66-3334340	BTA-33K	Voltage Divider
R74	18KΩ	2	66-3183340	BTB-18K	Voltage Divider
R75	2700Ω	1	66-1278340	BTS-270	Feedback Network
R76	15Ω		66-0158340		Feedback Network
R77	1.2Meg		66-5128340	BTS-1.2Meg	1st Sync. Sep. Grid
R78	10KΩ		66-3108340	BTS-10K	Bias Network
R79	6.8Meg		66-5688340	BTS-6.8Meg	Voltage Divider
R80	270KΩ		66-4278340	BTS-270K	2nd Sync. Sep. Grid
R81	100KΩ		66-4108340	BTS-100K	2nd Sync. Sep. Plate
R82	15KΩ		66-3158340	BTS-15K	Voltage Divider
R83	220KΩ 5%			BTS-220K-5%	Voltage Divider - See Note 7
R84	39KΩ		66-3398340	BTS-39K	Noise Limiter Load
R85	47KΩ		66-3478340	BTS-47K	Series Test Jack
R86	10KΩ		66-3108340	BTS-10K	Sync. Phase Inv. Grid
R87	1Meg		66-5108340	BTS-1Meg	Sync. Phase Inv. Grid
R88	15KΩ	2	66-3155340	BTB-15K	Sync. Phase Inv. Plate
R89	56KΩ	1		BTA-56K	Sync. Phase Inv. Decoupling - See Note 15
R90	56KΩ			BTA-56K	Sync. Phase Inv. Decoupling - See Note 15
R91	4700Ω		66-2478340	BTS-4700	Voltage Divider
R92	10KΩ		66-3108340	BTS-10K	Integrator
R93	4700Ω		66-2478340	BTS-4700	Integrator
R94	4700Ω		66-2478340	BTS-4700	Integrator
R95	270KΩ		66-4278340	BTS-270K	Vert. Osc. Grid - See Note 8
R96	1.5Meg		66-5158340	BTS-1.5Meg	Vert. Osc. Plate - See Note 9
R97	15KΩ		66-3158340	BTS-15K	Vert. Osc. Transformer Shunt
R98	5600Ω 5%			BTS-5600-5%	Vert. Peaking - See Note 10
R99	2.2Meg		66-5228340	BTS-2.2Meg	Vert. Output Grid
R100	470Ω	1	66-1478340	BTA-470	Vert. Output Cathode
R101	5100Ω	5	33-1335-18	1 3/4A-5000	Vert. Output Plate Decoupling - Wire Wound
R102	240KΩ 5%	1			Voltage Divider - See Note 11
R103	200KΩ	1			Voltage Divider - See Note 11
R104	100KΩ 20%	1	66-4104340	BTA-100K	Damping
R105	820KΩ 5%	1	66-4824240	BTS-820K-5%	Horizontal AFC Grid
R106	470KΩ	1	66-4474340	BTS-470K	Horizontal AFC Grid
R107	330KΩ 5%	1	66-4334240	BTA-330K-5%	Horizontal AFC Cathode
R108	820Ω	1	66-2828340	BTS-8200	Horizontal AFC Filter
R109	82KΩ	1	66-3824340	BTA-82K	Horizontal AFC Plate
R110	47KΩ	1	66-3474340	BTS-47K	Voltage Divider
R111	3.3Meg 5%	1	66-5334240	BTA-3.3Meg-5%	Voltage Divider
R112	560KΩ 5%	1	66-4564240	BTA-560K-5%	Horizontal Osc. Grid
R113	33KΩ	1	66-3334340	BTA-33K	Horizontal Osc. Plate
R114	6800Ω		66-2688340	BTS-6800	Horizontal Osc. Coil Shunt
R115	22KΩ		66-3228340	BTS-22K	Horizontal Osc. Coil Shunt
R116	22KΩ		66-3228340	BTS-22K	Horizontal Feedback Network
R117	220KΩ	3	66-4224340	BTS-220K	Horizontal Feedback Network
R118	1Meg 20%	1	33-1350		Horizontal Feedback Network
R119	100Ω 20%	1	66-1104340		Parasitic Suppressor
R120	1Meg			BTS-1Meg	Horizontal Output Grid - See Note 12

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R121	12KΩ	5	33-1335-103	1 3/4A-12K	Horizontal Output Screen - Wire Wound
R122	470Ω	2	66-1475340	BTB-470	Anti - Ringing Coil Shunt
R123	18KΩ	1	66-3184340	BTA-18K	Decoupling
R124	200KΩ	1			Voltage Divider - See Note 11
R125	200KΩ	1			Voltage Divider - See Note 11
R126	4.7Ω	½	66-9474360	BW-½-4.7	HV Rectifier Filament - Wire Wound
R127	3.6Ω	½		BW-½-3.6	HV Rectifier Filament - Wire Wound
R128	2Meg	1	33-1352		HV Filter
R129	2Meg	1	33-1352		HV Filter
R130	1000Ω	5	33-1335-105	1 3/4A-500	Voltage Divider - Wire Wound
R131A	500Ω	10	33-3445-4		Voltage Divider - Wire Wound
B	400Ω	10			Voltage Divider - Wire Wound
R132	150KΩ	½	66-4158340	BTS-150K	Voltage Divider
R133	100KΩ	½	66-4108340	BTS-100K	Bias Network
R134	10KΩ	½	66-3108340	BTS-10K	Bias Network
R135	6300Ω	20	33-3446-1		Decoupling - Wire Wound
R136	.24Ω	2		BW-2-.24	Filament Dropping - Wire Wound - See Note 4
R137	22Ω	1	66-0228340	BW-1-22	Isolation - Wire Wound
R138	10Ω 20%	½	66-0104340	BW-½-10	Series Pilot Light
R139	.08Ω				Filament Dropping - Piece of #24 Wire
R140	.03Ω				Filament Dropping - Piece of #24 Wire
R141	390Ω	1	66-1391340	BW-1-390	Centering Network - Wire Wound
R142	100KΩ 20%	1		BTA-100K	Isolation - See Note 17

Note 2. Some models use 4700Ω resistor in this application.
Note 3. Some models use 15KΩ resistor in this application.
Note 4. Some models use 150Ω resistor in this application.
Note 5. Some models use 6800Ω resistor in this application.
Note 6. Some models use 22KΩ resistor in this application.
Note 7. Some models use 240KΩ resistor in this application.
Note 8. Some models use 180KΩ resistor in this application.
Note 9. Some models use 680KΩ resistor in this application.
Note 10. Some models use 3300Ω resistor in this application.
Note 11. Some models use 220KΩ resistor in this application.
Note 12. Some models use 470KΩ resistor in this application.
Note 13. Some models use 4.7Ω resistor in this application.
Note 14. Some models use piece of wire in this application.
Note 15. Some models use 27KΩ, 2 watt resistor in place of R89 and R90.
Note 16. Some models use 5600Ω resistor in this application.
Note 17. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 2.6A	660VCT .33mADC	5VAC ③ 6A SEC. 4 6.3VAC ③ 4.4A	6.3VAC ③ 5.4A SEC. 5 6.3VAC ③ 1.6A	32-8488			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T2	117VAC ② .53A	24VAC ① 1.85A			32-8493			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	190Ω	365Ω			A-3000		Vert. Block Osc. Trans.
T4	150Ω Tap 23Ω	5.1Ω Tap 1.2Ω SEC. 2 0Ω SEC. 3 0Ω					Horizontal Output Trans.
T5	640Ω	22Ω	32-8454	A-8112 ①	A-3036 ①	TS8-1 ①	Vertical Output Trans.
T6A	12Ω		32-9644	DY-7			Horizontal Deflection Coil
B	47Ω						Vertical Deflection Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	2.3KΩ	3.5Ω	200Ω	.5Ω	32-8367-5	A-3825 ①	P-3018	R0-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.2Ω	36-1611-7	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 1/2"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	INDUCTANCE (@ CURRENT 1000 ↺)	REPLACEMENT DATA PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.15A	64Ω	1.5 Henries	32-8479-2				
L2	.34A	49Ω	2.5 Henries	32-8478-2				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L3	Ant. Trans.	.8Ω	.8Ω	76-6459		Includes L4
L4	Ant. Trans.	.8Ω	.8Ω	76-6459		Includes L3
L5	FM Trap	0Ω		32-4438-2		
L6	RF Choke	.4Ω		32-4112-22		
L7	Ant. Coils	0Ω		76-6463		Switch Wafer With Coils
L8	RF Coils	0Ω		76-6469		Switch Wafer With Coils
L9	Mixer Grid Coils	0Ω		76-6468		Switch Wafer With Coils
L10	Osc. Coils	0Ω		76-5768		Switch Wafer With Coils
L11	RF Choke	.1Ω		32-4112-22		
L12A	Fil. Choke	.1Ω		32-4503		
B	Fil. Choke	.1Ω				Part of L12A
L13	1st Video IF	.6Ω		32-4359-10		
L14	2nd Video IF	.2Ω		32-4486		
L15	Adj. Channel Sound Trap	0Ω		32-4303-3		
L16	3rd Video IF	.2Ω		32-4486		
L17	21.85MC Trap	.1Ω		32-4496		
L18	Fil. Choke	.1Ω		32-4112-15		
L19	4th Video IF	.2Ω	.2Ω	32-4486-6		
L20	RF Choke	.1Ω		32-4112-15		
L21	5th Video IF	.3Ω		32-4486		
L22	Fil. Choke	.1Ω		32-4112-15		
L23	Peaking	2.2Ω		32-4143-16		40 Microhenries
L24	Peaking	3.6Ω		32-4480-3	19-1920	100 Microhenries
L25	4.5MC Trap	1.6Ω		32-4483-5		
L26	Peaking	.4Ω				
L27	Peaking	4.6Ω		32-4480-9	19-1921	180 Microhenries
L28	Peaking	4Ω		32-4480-8	19-1921	125 Microhenries
L29	Peaking	3.6Ω		32-4480-3	19-1920	100 Microhenries
L30	Sound IF Ratio Det.	5Ω		32-4449A		
L31	Horiz. Osc. Trans.	5Ω	.8Ω	32-4450-2		
L32	Fil. Choke	.1Ω				
L33	Horiz. Osc. Coil	60Ω	48Ω	32-4506		
L34	Horiz. Lin.	10Ω		32-4501-1		Tap at 4Ω
L35	Width Coil	2.8Ω		32-4505		
L36	Anti-Ringing Coil	5Ω		32-4480		150 Microhenries
L37	Suppressor Coil	2Ω		32-4112-24		10 Microhenries

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA PHILCO PART No. FUSE	PHILCO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG Slo-Blo	8/10Amp	45-2658-21	27-4519-2	313.800	357001	
M2	See Note						Length of #26 Copper Wire
M3	See Note						Length of #26 Copper Wire

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.	NOTES
M4	Bayonet	6-8	.15	Brown	34-2068	Type #47

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M5A	RF Tuner	76-6481-1	Models 51-T2138, 51-T2176
B	RF Tuner	76-6440-1	Models 51-T2134, 51-T2136, 51-T2175
M6	Switch	76-6572	Models 51-T2138,51-T2176, (Switch Part of Volume Control on Models 51-T2134, 51-T2136, 51-T2175)
M7	Focus Magnet	76-6126-4	
M8	Ion Trap	76-6077-1	
M9	Solenoid Assembly	76-6416	Channel Selector (Models 51-T2138, 51-T2176)
M10	Solenoid Assembly	76-6416	Fine Tuning (Models 51-T2138, 51-T2176)
M11	Solenoid Assembly	76-6416	Contrast (Models 51-T2138, 51-T2176)
M12	Solenoid Assembly	76-6416	Volume (Models 51-T2138, 51-T2176)
M13	Motor	35-1465	Remote Control (Models 51-T2138, 51-T2176)
M14	Switch	42-1953	Muting (Models 51-T2138, 51-T2176)
M15	Switch	42-1950	Cycling (Models 51-T2138, 51-T2176)
M16	Switch	42-1950	Remote Control Channel Selector (Models 51-T2138, 51-T2176)
M17	Switch	42-1950-1	Remote Control Fine Tuning (Models 51-T2138, 51-T2176)
M18	Switch	42-1950	Remote Control Contrast (Models 51-T2138, 51-T2176)
M19	Switch	42-1950-1	Remote Control Volume (Models 51-T2138, 51-T2176)
M20	Slip Ring Assembly	42-1952	Models 51-T2138, 51-T2176
B3	Trimmer	31-6473-22	Horizontal Lock (45-370MMF)
B4	Trimmer	31-6473-22	Horizontal Drive (45-370MMF)
	Safety Glass	54-7943-28	Models 51-T2175, 51-T2176
	Safety Glass	54-7943-25	Models 51-T2136, 51-T2138
	Safety Glass	54-7943-27	Model 51-T2134
	Mask	56-8578-2	Model 51-T2134
	Mask	56-8578	Models 51-T2136, 51-T2138
	Mask	56-8578-1	Models 51-T2175, 51-T2176
	Knob	76-6064	Channel Selector (Models 51-T2134, 51-T2136, 51-T2175)
	Knob	76-6386	Channel Selector (Models 51-T2138, 51-T2176)
	Knob	76-6387	Fine Tuning (Models 51-T2138, 51-T2176)
	Knob	76-6104-1	Fine Tuning (Models 51-T2134, 51-T2136, 51-T2175)
	Knob	76-6048	Contrast
	Knob	54-4799	Volume
	Knob	76-6213	Tone
	Knob	54-4799	Brightness
	Knob	76-6048	Horizontal Hold
	Knob	54-4799	Vertical Hold
	Knob	54-4750	Antenna Tuning

L. E. BLAKELY
3611 MEADE ST.
DENVER, COLORADO

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V24	FM RF Amplifier	6AU6	6AU6	7BK	
V25	Converter - Phono Pre-Amp.	12AT7	12AT7	9A	
V26	1st IF Amplifier	6BA6	6BA6	7BK	
V27	2nd IF Amplifier	6AU6	6AU6	7BK	
V28	Ratio Detector - AM Detector	6BC7	6BC7	9R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C120	2	50	30-2417-7	E26E6		BB2-50T		TVA-1301	Stabilizing Cap
C121	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	FM RF Plate Dec.
C122	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	FM RF Screen
C123	47		62-051009001	SI47	D6-470	5W5Q5	GP1K-47	19C25	FM RF Cathode
C124	5000		30-1238-1	BPD-005	DD-502	1D5D5	811-005	29C1	FM RF Fil.
C125	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C126	680		62-168001001	SI680	D6-681	1W5T7	GP2K-680	19C17	RF Coupling
C127	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Grid Bypass
C128	.022	200	45-3505-43	P488-022	DF-203	PTE4S2		4TM-S22	Audio Coupling
C129	.022	200	45-3505-43	P488-022	DF-203	PTE4S2		4TM-S22	Tone Comp.
C130	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821-01	4TM-S1	AM Mixer Cathode
C131	47		62-051009001	SI47	D6-470	5W5Q5	GP1K-47	19C25	FM Mixer Cathode
C132	3.3		30-1224-49	SI3.3NPO	TCZ-3.3		NPOK-3.3		Osc. Coupling
C133	470		62-147001001	SI470	D6-471	5W5T1	GP2K-470	19C15	Osc. Feedback
C134	7.5		30-1224-65						Fixed Trimmer
C135	4.7		30-1224-41	SI4.7NPO	TCZ-4.7		NPOK-4.7		Fixed Trimmer
C136	5000		30-1238-1	BPD-005	DD-502	1D5D5	811-005	29C1	Conv. Filament
C137	5000		30-1238-1	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C138	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Plate Dec.
C139	5000		30-1238-1	BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C140	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Bypass
C141	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Conv. Decoupling
C142	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821 -01	4TM-S1	AVC Filter
C143	.022	400	45-3505-43	P488-022	DF-203	PTE4S2		4TM-S22	RF Bypass
C144	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Bypass
C145	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821-01	4TM-S1	1st IF Fil.
C146	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821-01	4TM-S1	1st IF Plate Dec.
C147	.0022	400	45-3505-43	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	1st IF Screen
C148	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	2nd IF Grid
C149	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	2nd IF Dec.
C150	.0022	400	45-3505-43	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	2nd IF Dec.
C151	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	821-01	4TM-S1	2nd IF Cathode
C152	100		62-110009001	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Bypass
C153	220		62-122001001	SI220	D6-221	5W5T2	GP2K-220	19C13	Diode Load Cap
C154	.0022	400	45-3505-43	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	De-emphasis
C155	220		62-122001001	SI220	D6-221	5W5T2	GP2K-220	19C13	Det. Filament

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
R143	120Ω	1/2	66-1128340	BTS-120	RF Amp. Cathode
R144	10KΩ	1/2	66-3108340	BTS-10K	RF Amp. Screen
R145	2.2Meg	1/2	66-5228340		Converter Grid
R146	4700Ω	1/2	66-2478340	BTS-4700	Converter Decoupling
R147	15KΩ	1/2	66-3158340	BTS-15K	Osc. Grid
R148	330Ω	1/2	66-1338340	BTS-330	FM Osc. Cathode
R149	1000Ω	1/2	66-2108340	BTS-1000	AM Osc. Cathode
R150	47KΩ	1/2	66-3478340	BTS-47K	Tone Compensation
R151	10Meg	1/2	66-6108340	BTS-10Meg	Phono Pre- Amp. Grid
R152	220KΩ	1/2	66-4228340	BTS-220K	Phono Pre-Amp. Plate
R153	4700Ω	1/2	66-2478340	BTS-4700	FM Osc. Plate
R154	47KΩ	1/2	66-3478340		AM Osc. Plate
R155	1Meg	1/2	66-5108340	BTS-1Meg	AVC Network
R156	47Ω	1/2	66-0478340		1st IF Amp. Cathode
R157	10KΩ	1/2	66-3108340		1st IF Amp. Screen
R158	2700Ω	1/2	66-2278340	BTS-2700	1st IF Amp. Plate Decoupling
R159	1Meg	1/2	66-5108340		2nd IF Amp. Grid
R160	120Ω	1/2	66-1128340	BTS-120	2nd IF Amp. Cathode
R161	2200Ω	1/2	66-2228340	BTS-2200	2nd IF Amp. Decoupling
R162	47KΩ	1/2	66-3478340	BTS-47K	Ratio Det. Diode Load
R163	47KΩ	1/2	66-3478340	BTS-47K	De-emphasis
R164	47KΩ	1/2	66-3478340	BTS-47K	Diode Filter
R165	470KΩ	1/2	66-4478340	BTS-470K	Diode Load
R166	3.3Meg	1/2	66-5338340	BTS-3.3Meg	AVC Network
R167	.24Ω	2	66-8245340	BW-2-.24	Filament Dropping - Wire Wound

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	IRC PART No.	
L38	FM Ant. Coil	0Ω		32-4467			
L39	Fil. Choke	.4Ω		32-4422-15		CL-1	1 Microhenry
L40	RF Choke	3Ω		32-4422-10		CL-A	3.3 Microhenries
L41	FM RF Coil	0Ω		32-4477			
L42	FM Osc. Coil	0Ω		32-4414-2			
L43	Loop Ant.						One Turn Around Cabinet
L44	AM Ant. Coil	2.2Ω		32-4413-1			Tap at .5Ω
L45	AM Osc. Coil	10Ω		32-4458-1			Tap at 3.3Ω and 4.2Ω
L46	Fil. Choke	.4Ω		32-4422-15		CL-1	1 Microhenry
L47	RF Choke	3Ω		32-4422-10		CLA	3.3 Microhenries
L48	1st AM IF	12Ω	12Ω	32-4258-2A			Primary Tapped at 5Ω
L49	1st FM IF	1.5Ω	1.5Ω	32-4372A			
L50	2nd FM IF	2.1Ω	2.1Ω	32-4372-2A			
L51	Ratio Det. Trans.	4Ω	.5Ω	32-4310-3A			
L52	2nd AM IF	16Ω	16Ω	32-4240-3A			

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE and NEEDLE

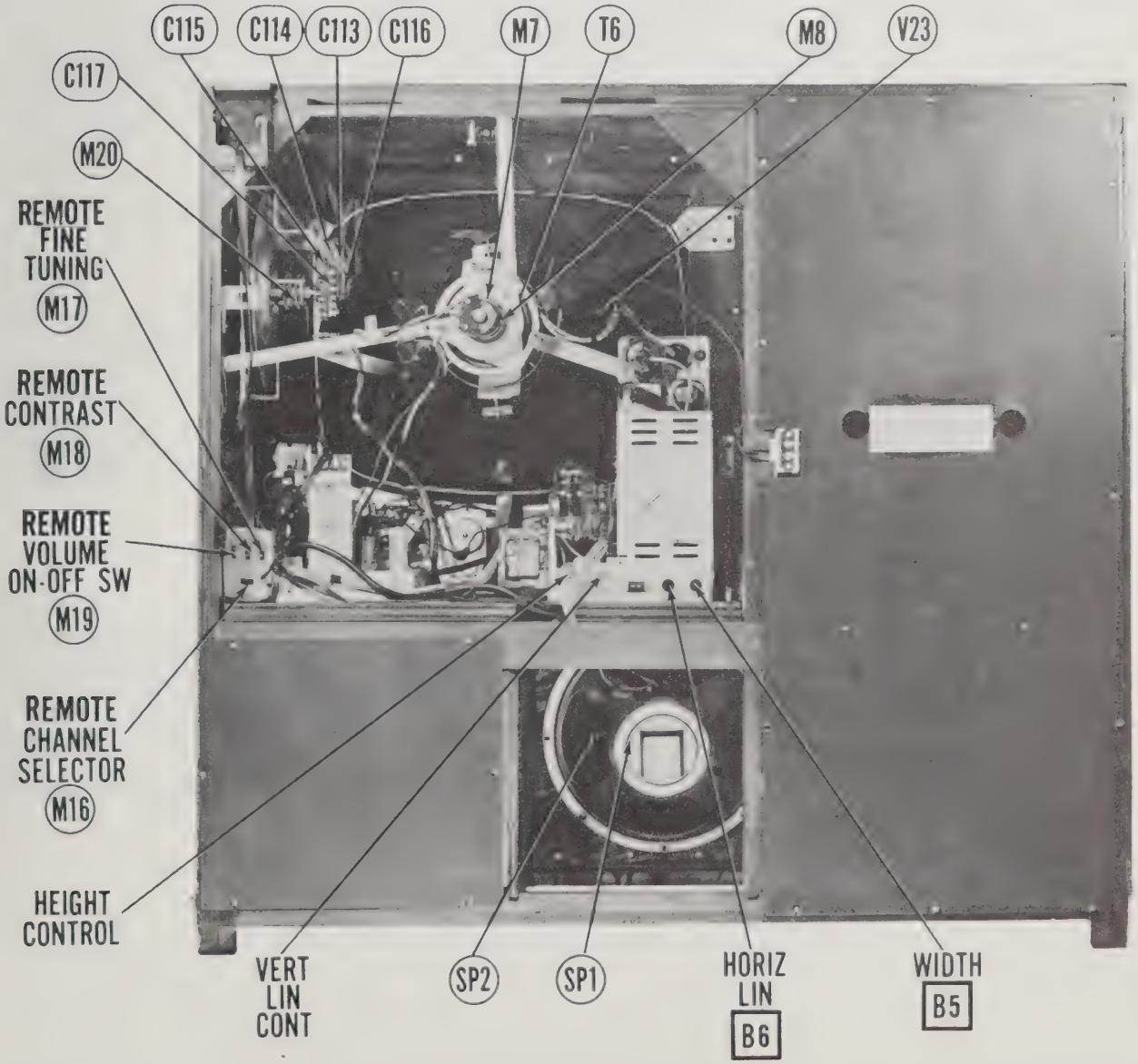
ITEM No.	REPLACEMENT DATA						REMARKS
	PHILCO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M21	76-4649							

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		NOTES
M22	Bayonet	6-8	.25	Blue	34-2064		Type #44 (Radio Dial)
M23	Bayonet	6-8	.25	Blue	34-2064		Type #44 (Phono Compartment)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M24	Switch	42-1938	Function Phono-AM-FM-TV (Models 51-T2175, 51-T2176)
M25	Tuning Capacitor	31-2756-1	36-492MMF, 19-162MMF (Models 51-T2175, 51-T2176)
	Pointer	56-5630-28FCP	Dial (Models 51-T2175, 51-T2176)
	Scale	54-5106	Dial (Models 51-T2175, 51-T2176)
	Panel	54-8171	Diffusing (Models 51-T2175, 51-T2176)
	Knob	54-4798-4	Function Switch (Models 51-T2175, 51-T2176)
	Knob	54-4798	Tuning (Models 51-T2175, 51-T2176)



CABINET-REAR VIEW

PROPERTY OF
L. F. BLANKENSHIP
3624 MEADE ST.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Pre-set the adjustment as follows:

Horizontal lock-in trimmer, (B3), one turn counter-clockwise from maximum clockwise.

Horizontal stabilizing core, (B2), until the screw extends 5/8 inch above the can.

Horizontal drive trimmer, (B4), one turn counter-clockwise from maximum clockwise.

Horizontal hold control to the center of its range.

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal frequency slug, (B1), to synchronize the picture horizontally.

Connect the vertical input lead of an oscilloscope to terminal 3 of the horizontal test socket.

Adjust the horizontal stabilizing core (B2) until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 6. If necessary adjust B1 to keep the picture synchronized during adjustment of B2. Note: In moderately strong signal areas, free from noise, the double triggering tendency of the oscillator may be reduced by adjusting B2 until the rounded portion of the waveform is slightly lower than the narrow peak. Do not adjust for more than a slight difference in height, for to do so will render the oscillator too insensitive.. Remove the oscilloscope and turn the hold control to maximum clockwise.

Adjust B1 until the picture shows 4 bars sloping downward to the right. Note: If this adjustment is made before the set has thoroughly warmed up, adjust B1 for sloping bars.

Turn the hold control to maximum counter-clockwise and interrupt the signal by switching to another channel and back again. Slowly turn the hold control clockwise and carefully note the least number of sloping bars just before the picture pulls into sync. If more than 3 1/2 bars are present, adjust B3 slightly counter-clockwise. If less than 2 1/2 bars are present, adjust B3 slightly clockwise.

Repeat the check and adjustment of B3 until 2 1/2 to 3 1/2 bars are present at the pull-in point.

Turn the hold control to maximum counter-clockwise and adjust B1 until 4 sloping bars are obtained.

Turn the hold control clockwise and check to see that the picture pulls into sync then falls out of sync at maximum clockwise.

HORIZONTAL DRIVE, WDITH AND LINEARITY ADJUSTMENT

Adjust the horizontal drive trimmer (B4) counter clockwise as far as possible without vertical lines appearing in the picture.

Adjust the horizontal linearity slug (B6) until the picture is symmetrical from left to right.

Readjustment of B4 may be required to obtain proper width and best linearity.

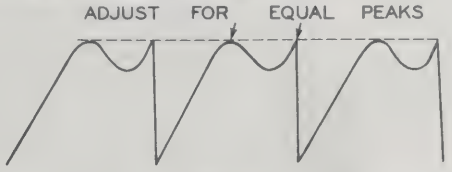


FIG. 6

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DISASSEMBLY INSTRUCTIONS

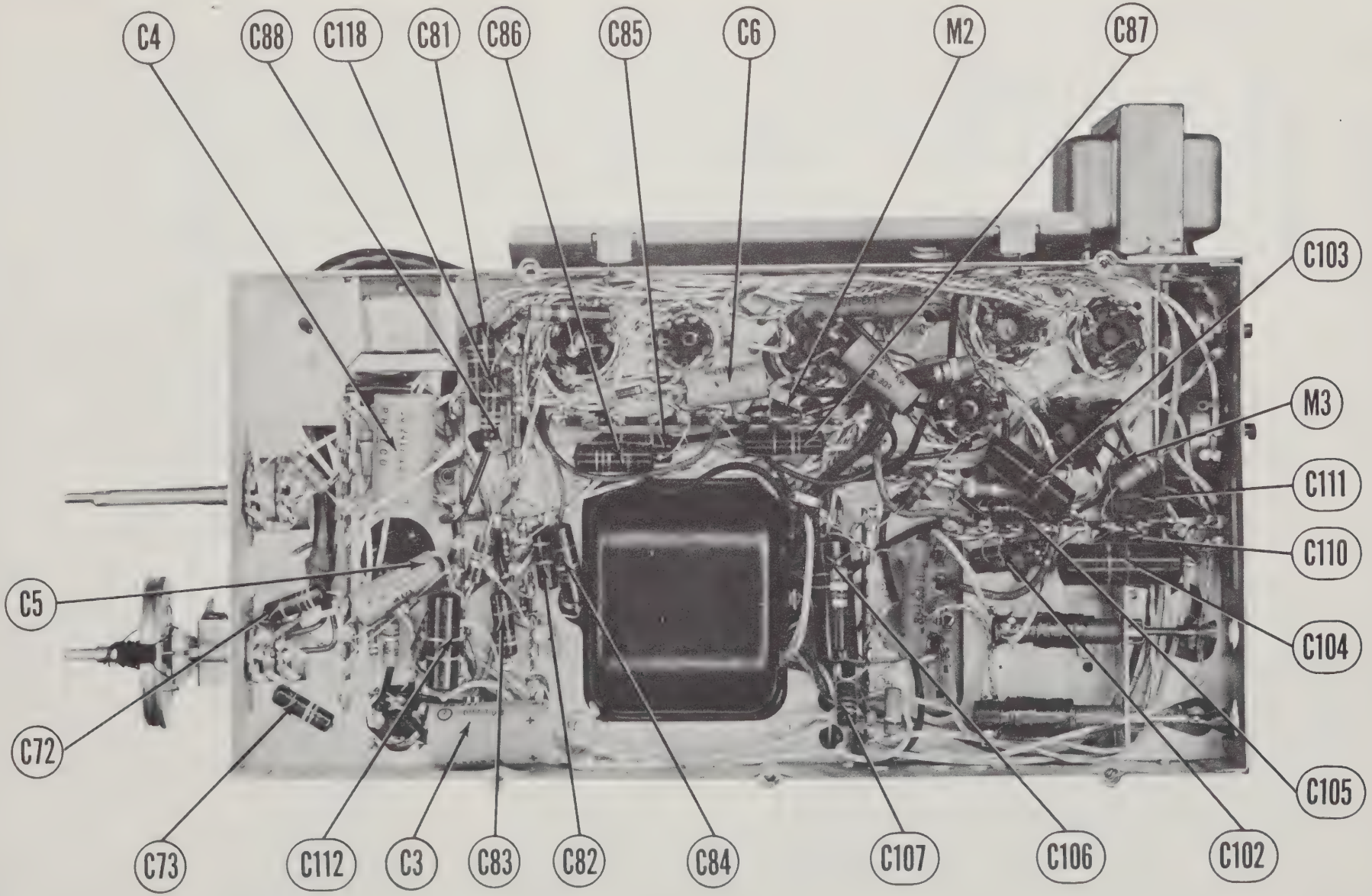
TV CHASSIS REMOVAL

1. Remove eight push-on type control knobs.
2. Remove twelve wood screws from rear cover.
3. Disconnect built-in antenna.
4. Disconnect remote control motor plug.
5. Disconnect picture tube socket.
6. Disconnect high voltage lead.
7. Disconnect yoke plug.
8. Disconnect radio audio plugs.
9. Disconnect power plug to RF-IF chassis.
10. Disconnect radio power plug .
11. Disconnect speaker.
12. Remove four hex nuts from speaker.
13. Remove eight hex head bolts holding mounting shelf in cabinet. Remove shelf and chassis.
14. Remove seven hex head bolts from RF-IF chassis. Remove chassis.
15. Remove seven hex head bolts from sweep chassis. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

RADIO CHASSIS REMOVAL

1. Remove two push-on type control knobs.
2. Remove fourteen wood screws securing rear cover to cabinet. Remove rear cover.
3. Disconnect AM antenna.
4. Disconnect FM antenna.
5. Disconnect phono power plug.
6. Disconnect phono audio plug.
7. Remove four hex head bolts from chassis. Remove chassis.



SWEEP CHASSIS-CAPACITOR IDENTIFICATION

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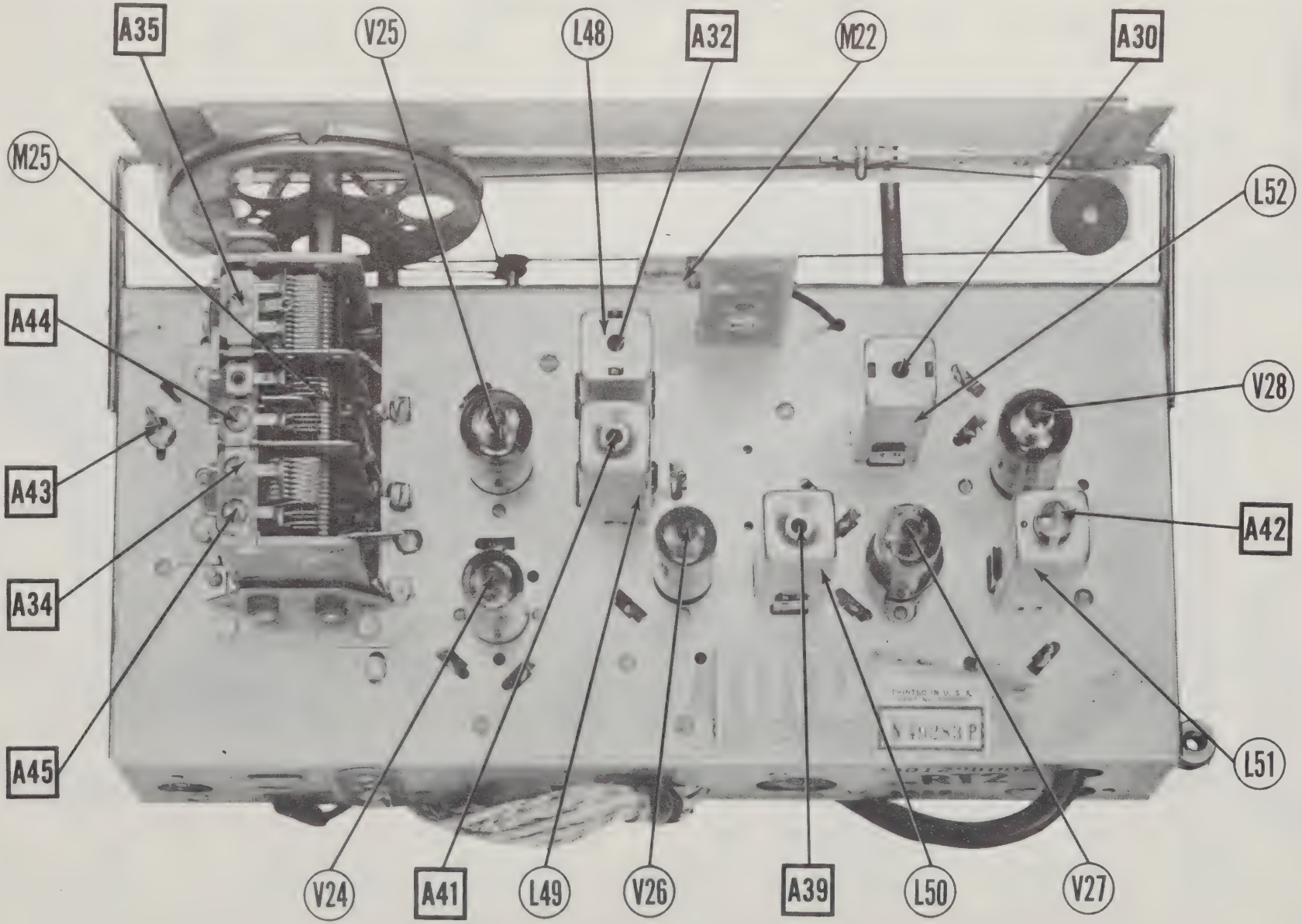
SWEEP CHASSIS-TOP VIEW



RADIO CHASSIS-TOP VIEW

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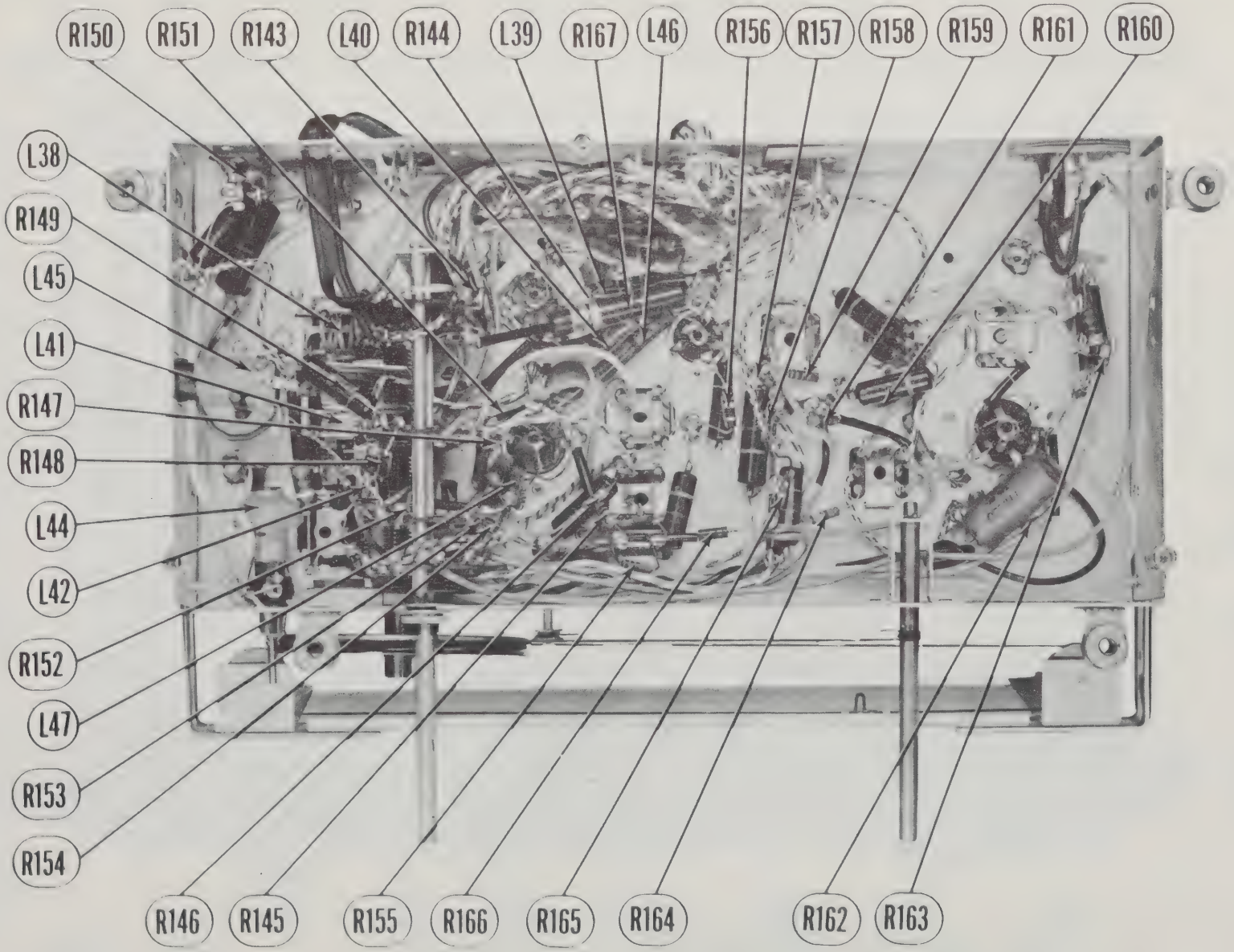
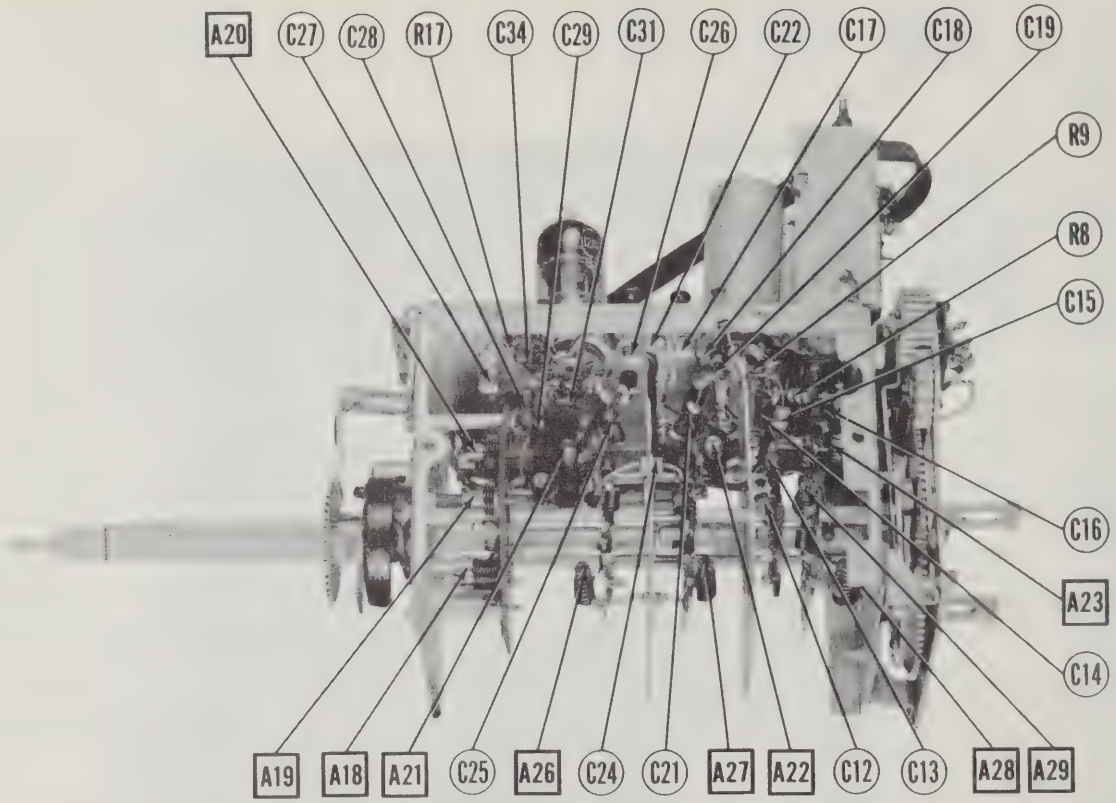
RADIO CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

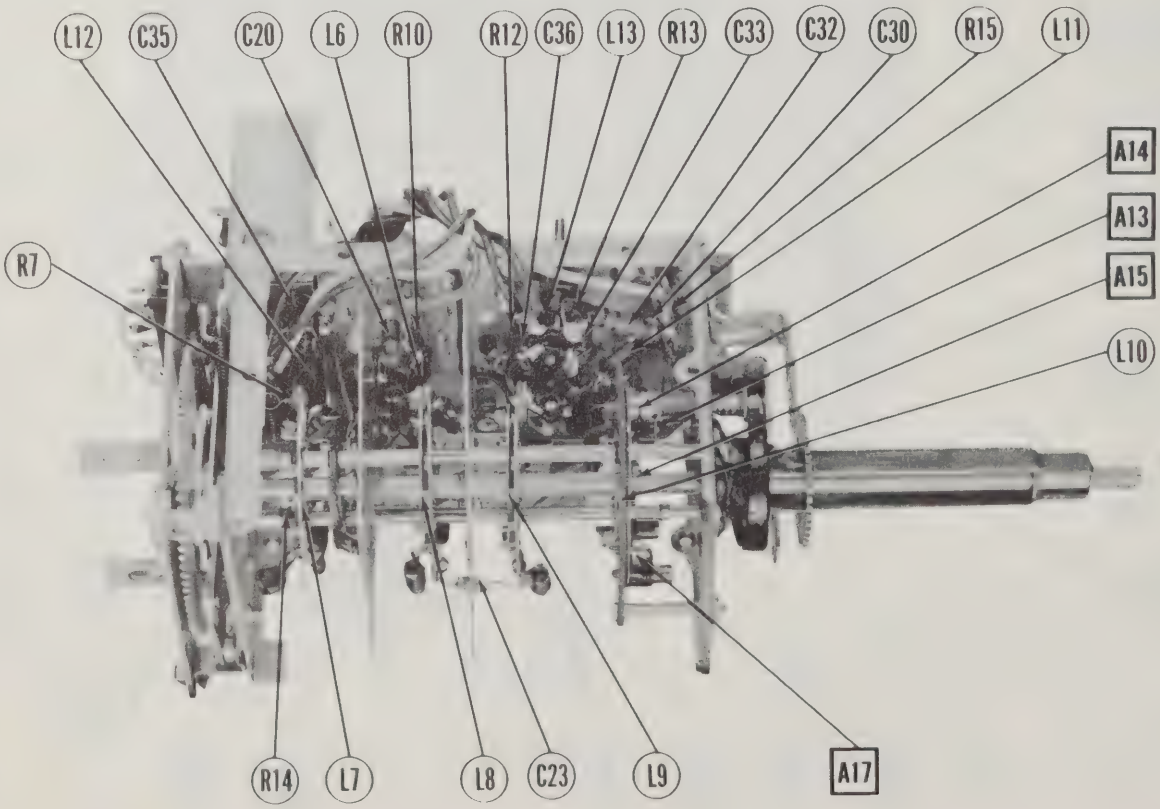


RADIO CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION

SWEEP CHASSIS-RESISTOR IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

SERVICE INFORMATION
FOR
REMOTE CONTROL UNIT RC-1

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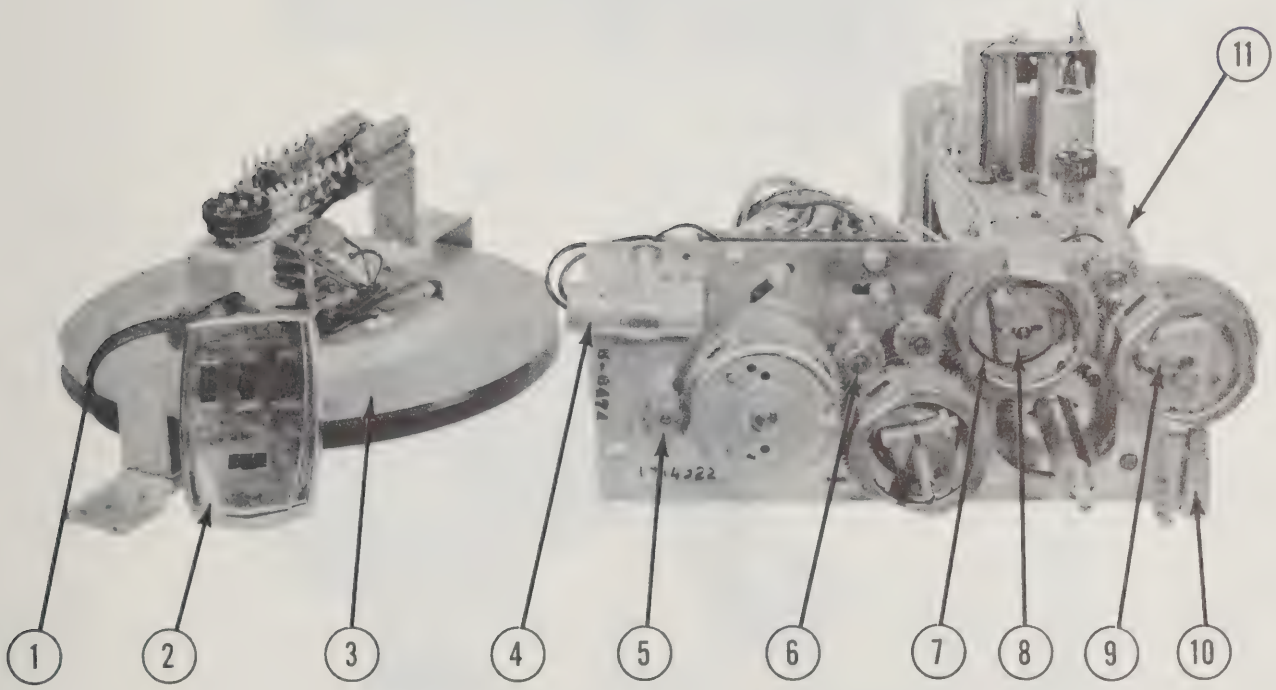

FIGURE 1.

GENERAL INFORMATION

The Remote Control Unit makes it possible to tune and adjust the television receiver from any point up to a distance of thirty feet. The adjustments are made by the operation of a group of switch levers on a control box. A flat eight conductor cable, which is stored on a self-winding reel, connects the control box to the control mechanism.

The Remote Control Unit consists of three major assemblies:
(A) Control Box and Reel Assembly
(B) Clutch and Gear Assembly with Solenoid Coils
(C) Motor Assembly

REEL ASSEMBLY AND CONTROL BOX

There are three major parts in the Control Box and Reel Assembly:

- Thirty feet of eight conductor cable (1)
- Reel assembly (3)
- Control Box (2)

The cable may be stopped at any distance up to thirty feet by pulling it about six inches past the desired point and then letting it rewind slowly until the pawl on the reel drops in the slot locking the reel in place. The cable can be rewound on the reel by pulling the cable out swiftly about six inches and then letting the reel wind up the cable.

Four (Double-Pole, Double-Throw) self-centering switches constitute the contents of the Control Box.

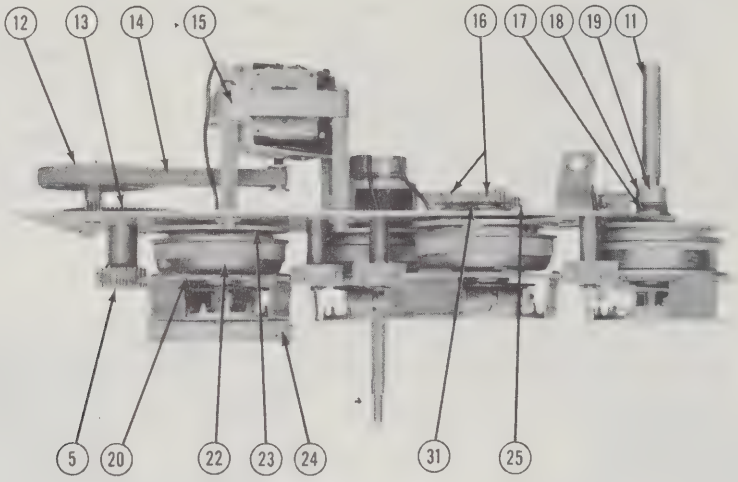

FIGURE 2.

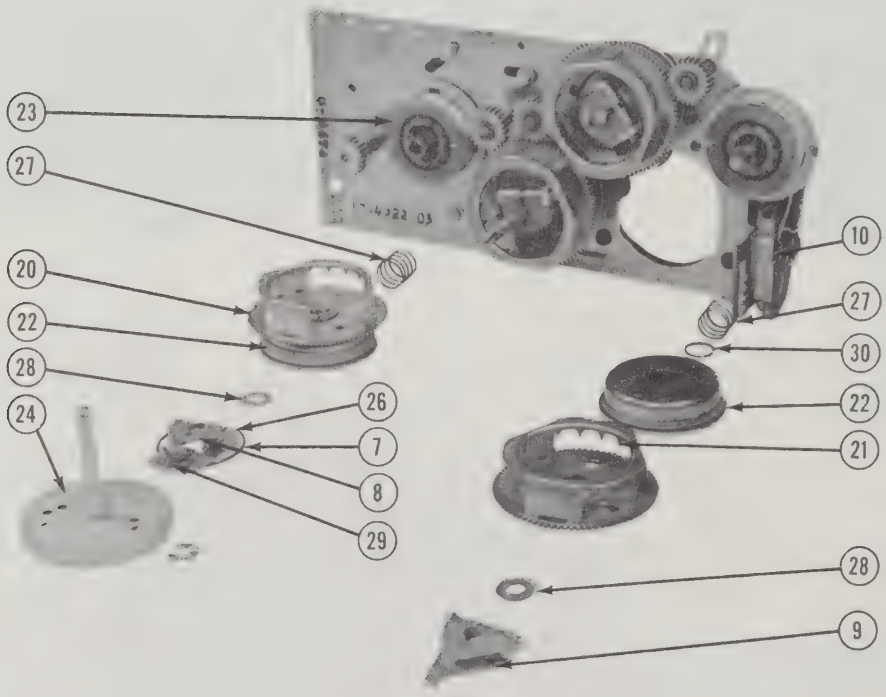

FIGURE 3.

GENERAL OPERATION

The shaft of the 24 Volt AC motor (15) (See Fig. 2) will turn in either a clockwise or counterclockwise direction by applying 24 Volts AC to either of two fields which are electrically 90° apart. The direction in which the motor rotates is determined by moving one of the switch levers on the Control Box to either of the two off-center positions. As the motor starts, the drive belt (14) drives the intermediate pulley and gear assembly (12), which in turn starts the drive gear assembly (13) rotating. The drive gear pinion (5) turns the clutch and gear assembly (20) on the volume control shaft. Through this process the three other clutch and gear assemblies are put into a rotary motion. The clutch and gear assemblies will revolve as long as the motor shaft is turning.

Moving one of the self-centering switches on the Control Box to start the motor will also energize an associated solenoid coil (23). The armature (22) is then attracted by magnetic force of the solenoid and is pulled inward compressing the return spring (27) (See Fig. 3). The armature (22) is secured to the shaft of the clutch and gear assembly (20) by the retaining washer (30). Therefore, the clutch and gear assembly moves with the armature and, as a result, a tooth of the clutch engages the toggle (29) of the safety driver (8), which in turn, rotates the selected control. The toggle of the safety driver assembly is held in position by the toggle spring (7) which maintains enough pressure to make the driver turn the control in normal operation; however, when the control is turned to its maximum rotation, clockwise or counterclockwise, the spring tension is overcome, allowing the toggle (29) to slip off the clutch tooth with an accompanying clicking noise until the voltage is removed from the solenoid (23), or until the control is made to turn in the opposite direction. This safety feature prevents the gears from locking. An ordinary driver (9), instead of a safety driver (8), is used on the channel selector control since this control can be rotated continuously.

When the voltage is removed from the solenoid (23), the return spring (27) causes the disengagement of the clutch tooth with the toggle (29).

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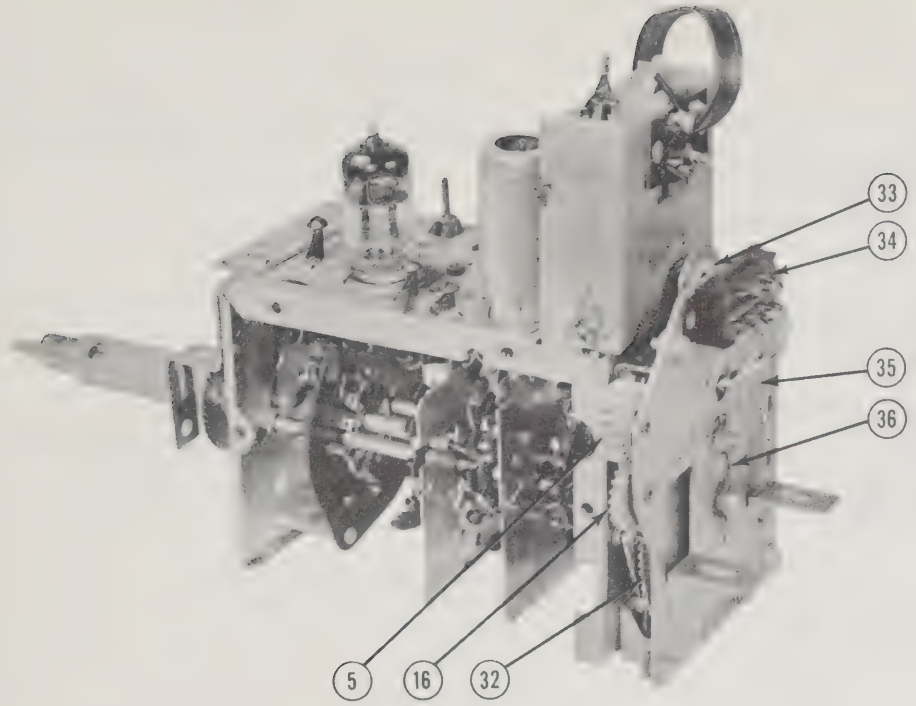


FIGURE 4.

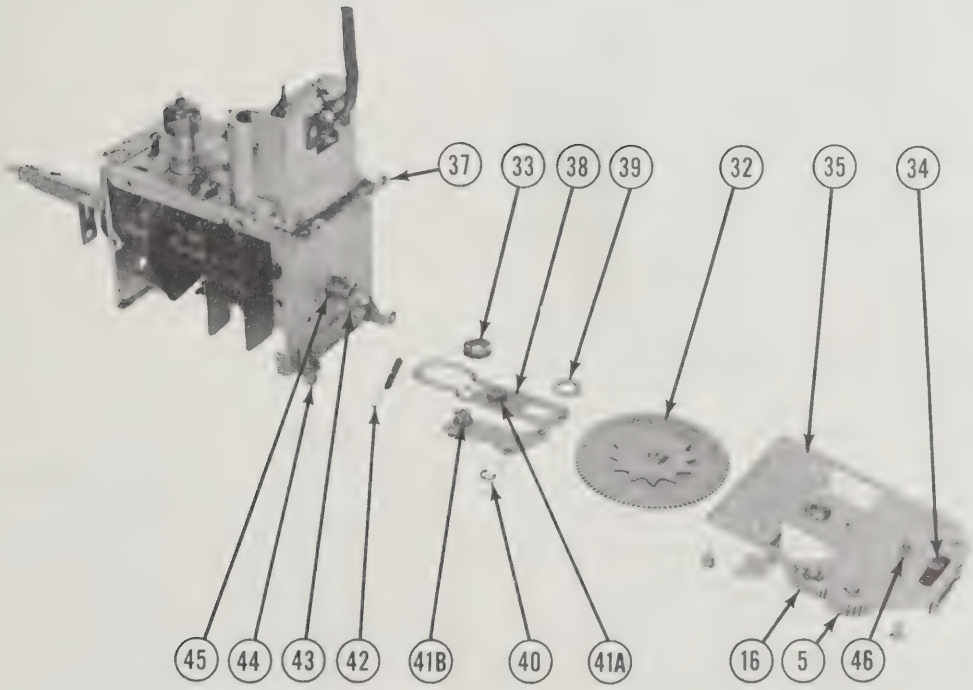


FIGURE 5.

OPERATION OF CHANNEL SELECTOR

When the station selector switch on the Control Box (2) is operated, the motor and channel selector solenoid are energized. As the magnetic force set up by the solenoid pulls the clutch and gear assembly (21) inward, closing the solenoid switch (10), a tooth of the clutch engages with the toggle of the ordinary driver (9) and starts the tuner shaft (11) rotating. The roller (41A) (See Fig. 5) fastened on the centering lever is subjected to an upward force as well as a lateral force by the star wheel of the detent plate assembly (32). Until the centering lever (38) has traveled far enough sideways to close the cycling switch (34), the centering pin (46) will prevent any upward motion. The cycling switch (34) is in series with the solenoid switch (10) and together parallel the station selector switch in the control box. If the station switch on the control box is released before the cycle is completed, voltage is still applied to the solenoid through the cycling switch (34) and the solenoid switch (10). When the cycle is completed, the detent roller (41B) rolls down into one of the detents of the detent plate (32) star wheel, releasing the tension on the detent spring (42) which returns the centering lever (38) to the center of the cycling switch (34) thereby opening the switch. This cuts off voltage to the solenoid, and motor, allowing the return spring (27) to push the clutch and gear assembly out of engagement with the toggle on the ordinary driver (9), and opening the solenoid switch (10). During manual rotation of the tuner shaft no voltage is applied to the motor or solenoid as the solenoid switch (10), in series with the cycling switch (34), remains open.

The other section of the solenoid switch is used to mute the sound during remote control operation of the channel selector. This switch, closed only during remote operation, grounds the hot side of the speaker voice coil.

SERVICING HINTS

1. .Buzzing
   a. Armature seating improperly on pole-piece face of solenoid.
   b. Burrs on pole-piece.
   c. Foreign matter between armature and pole-piece.
   d. Armature engaging solenoid switch (10) before last 1/64" of movement.
   e. Uneven surface on inside of armature (22).
2. Armature Binds on Solenoid Bushing
   a. Foreign matter or burrs on Solenoid Bushing
3. Tuner Fails to Rotate
   a. Line voltage too low.(It should not be less than 105 Volts)
   b. Faulty motor capacitor (4).
   c. Faulty motor (15).
   d. Faulty transformer.(
   e. Tuner shaft (11) binding. (The shaft must be aligned so it rotates freely and has .005 " to .015 " end-play.
4. Clutch and Gear Assemblies Fail To Rotate When Motor Is Energized.
   a. Oil or grease on motor belt (14).
   b. Motor belt loose.
   c. Driving pinion (5) loose on driving gear (13) shaft.
   d. Burrs or foreign matter in gear teeth.
   e. Leads fouling moving parts.
   f. Bent pinion gear shaft.
5. Clutch Teeth Fail to Engage Toggle of Driver When Solenoid is Energized
   a. Clutch teeth more than 1/32" from toggle when clutch is in neutral position.
6. Driver Fails to Rotate Control Shaft When Clutch is Engaged
   a. Driver loose on control shaft.

LUBRICATION

Lubrication is applied at the time of manufacture and should be sufficient to last for a long period of time. However, in the event of repairing or replacing of parts, parts needing lubrication should be cleaned with carbon tetrachloride and lubricated as follows:

Use a good cup grease on the following:
1. Intermediate pulley and gear (12).
2. All gear teeth.
3. Toggle (29) of safety drivers (8).
4. Teeth of clutch (20) and (21).
5. Reel Bearings.

Use S.A.E. 20 oil on the following:
1. Threads and bearing surfaces of the solenoid bushings.
2. Motor Bearings
3. Shaft of volume control pulley assembly (24).
4. Fine tuning shaft.
5. Studs of link assembly (31).
6. Bearings of tuner drive shaft.
7. Left side of reel (3) and washer.

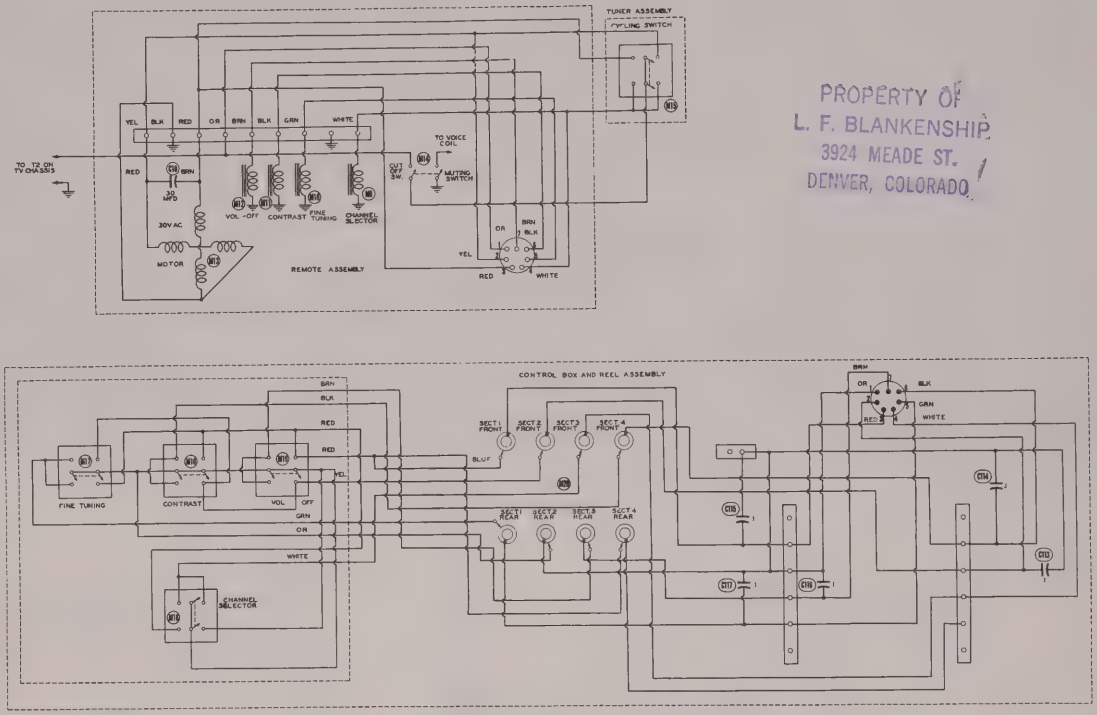
Use a mixture of grease and graphite on the following:
1. Bearing surface of reel (3) power spring.

Use graphite on the following:
1. Reel (left side) and pawl.

CAUTION: Do not allow any oil or grease to come in contact with the drive belt (14) or the belt driving surface of the intermediate pulley (12). Any oil or grease on these parts should be removed with carbon tetrachloride.

PARTS LIST

Item	Part Number	Description
1	41-4069	Cable
2		Control Box Assembly -Consists of:
	42-1950	Switch (Channel Selector, Contrast)2 used
	42-1950-1	Switch (Fine Tuning, Volume-On/Off) 2 used
	56-8581	Spring
3		Reel Assembly - Consists of:
	56-8637	Bearing, reel
	56-8642	Ring, spring retainer
	42-1952	Slip-Ring Assembly
	56-8636	Spring, power
	56-8643	Pawl
	56-8644	Ratchet
4	30-2355-3	Capacitor, motor
5	56-8628	Pinion, gear - 5 used
6	1W60977FE7	Washer, "E", pinion mounting
7	56-8805FA15	Toggle Spring
8	56-8806	Safety Driver - 3 used
9	76-6475	Ordinary Driver Assembly
10	42-1953	Solenoid Switch Assembly
11	76-6425	Shaft Assembly (Side of Tuner)
12	56-8736	Intermediate Pulley and Gear
13	76-6413	Driving Gear Assembly
14	54-8318	Belt
15	35-1465	Motor Assembly
16	56-8628-1	Pinion Idler - 4 used
17	56-8615	Bushing
18		Set Screw
19	56-8661	Collar
20	76-6424	Clutch Assembly - 3 used
21	76-6424-1	Clutch Assembly (Channel Selector)
22		Armature
23	76-6416	Solenoid Coil Assembly
24	76-6428	Shaft and Pulley Assembly (Volume Control Driver)
25	76-6526	Shaft and Pinion Assembly (Fine Tuning)
26	56-7042	Nut
27	56-8613FE15	Return Spring
28		Neoprene Washer
29	56-8804	Toggle
30	1W42310FE7	Washer, retaining
31	76-6525	Link Assembly
32	76-6420	Detent Plate Assembly
33	56-8592	Switch Handle Bushing
34	42-1950	Switch (Cycling)
35	76-6422	Rear Bracket Assembly
36	56-8023	Spring, shaft grounding
37	56-8608	Bracket (Tuner Top)
38	76-6421	Centering Lever Assembly
39	56-8603	Spacer, brass
40	1W60977FE7	"E" Washer
41	56-8597	Detent Roller
42	56-8817	Detent Spring
43	56-8812	Washer, steel
44	76-6419	Bracket Assembly (Bottom)
45	56-8604	Spacer Bushing
46		Centering Pin



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REMOTE CONTROL WIRING DIAGRAM

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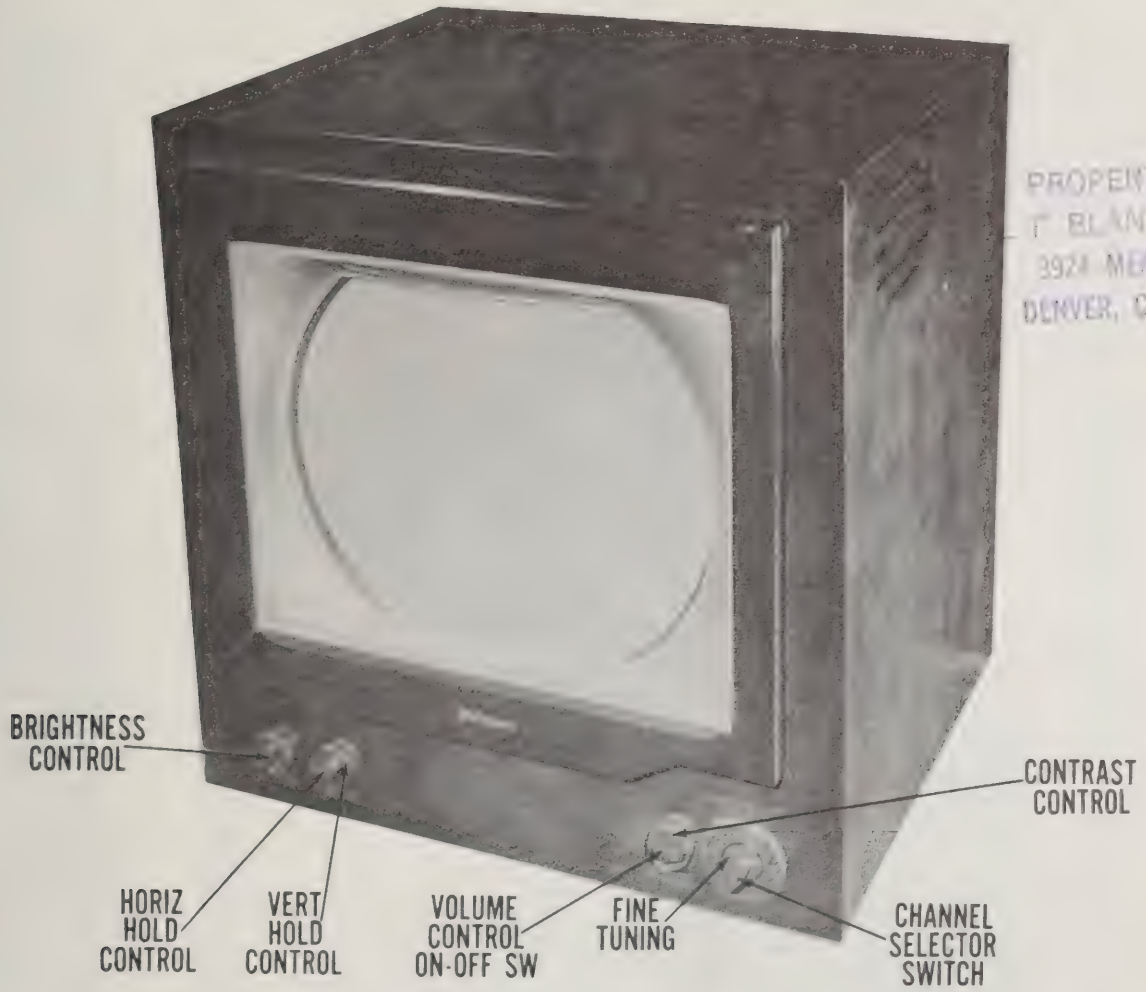

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PHILMORE
MODEL CP-731D

PHILMORE MODEL CP-731D

TRADE NAME	Philmore, Model CP-731D
MANUFACTURER	Philmore Mfg. Co., 113-115 University Place, New York (3), New York
TYPE SET	Television Receiver
TUBES	Thirty One
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 2.7 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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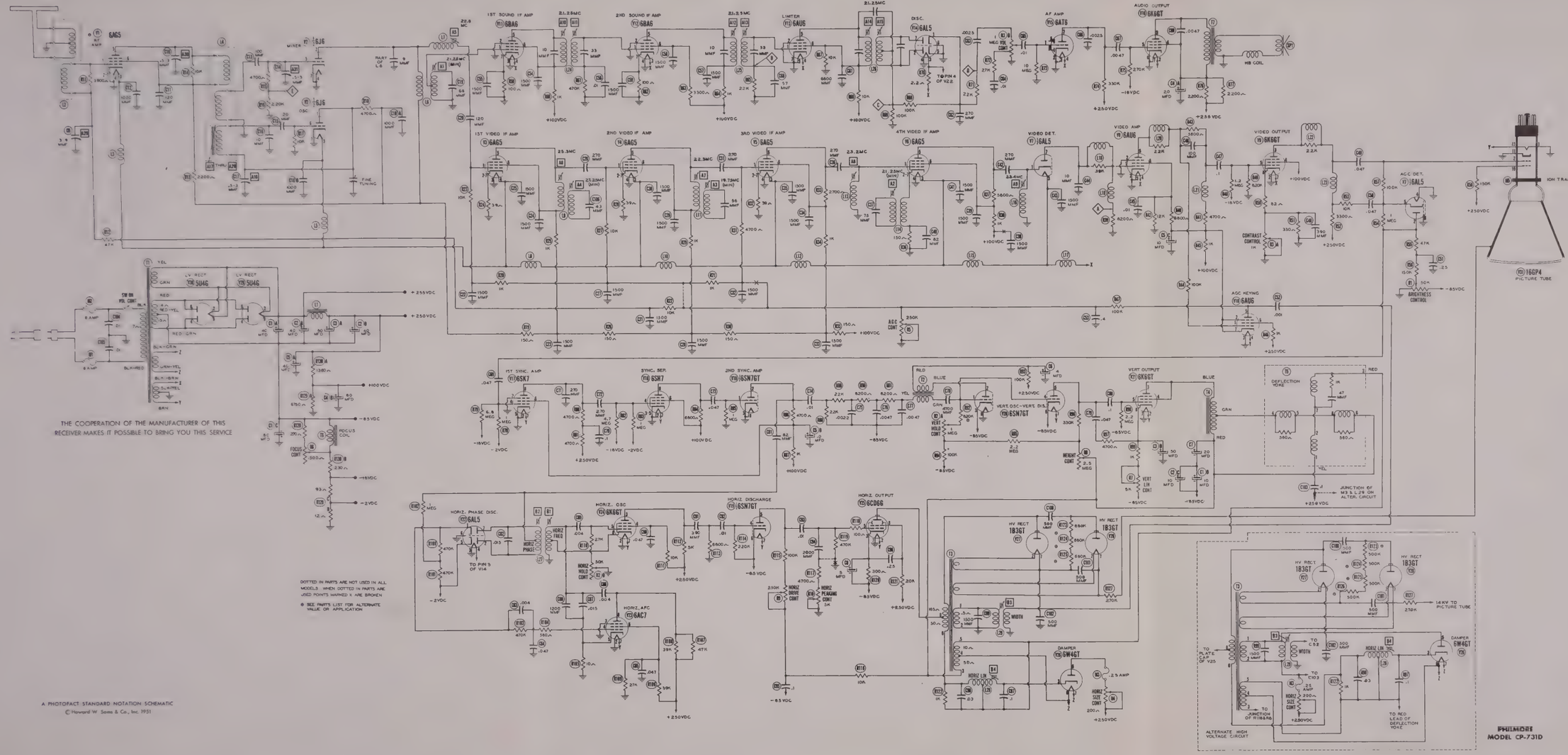
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2ND SOUND IF AMP
LIMITER
DISC.
AF AMP
AUDIO OUTPUT
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
4TH VIDEO IF AMP
VIDEO DET.
VIDEO AMP
VIDEO OUTPUT
ACC DET.
AGC KEYING
1ST SYNC. AMP
SYNC. SEP.
2ND SYNC. AMP
VERT OSC-VERT DIS.
VERT OUTPUT
HORIZ. PHASE DISC.
HORIZ. OSC.
HORIZ. DISCHARGE
HORIZ. OUTPUT
HORIZ. AFC
HV RECT
DAMPER
ION TRAP
PICTURE TUBE
CONTRAST CONTROL
BRIGHTNESS CONTROL
HEIGHT CONT
WIDTH
HORIZ SIZE CONT
HORIZ LIN
ALTERNATE HIGH VOLTAGE CIRCUIT
TO DEFLECTION YOKE
14 KV TO PICTURE TUBE
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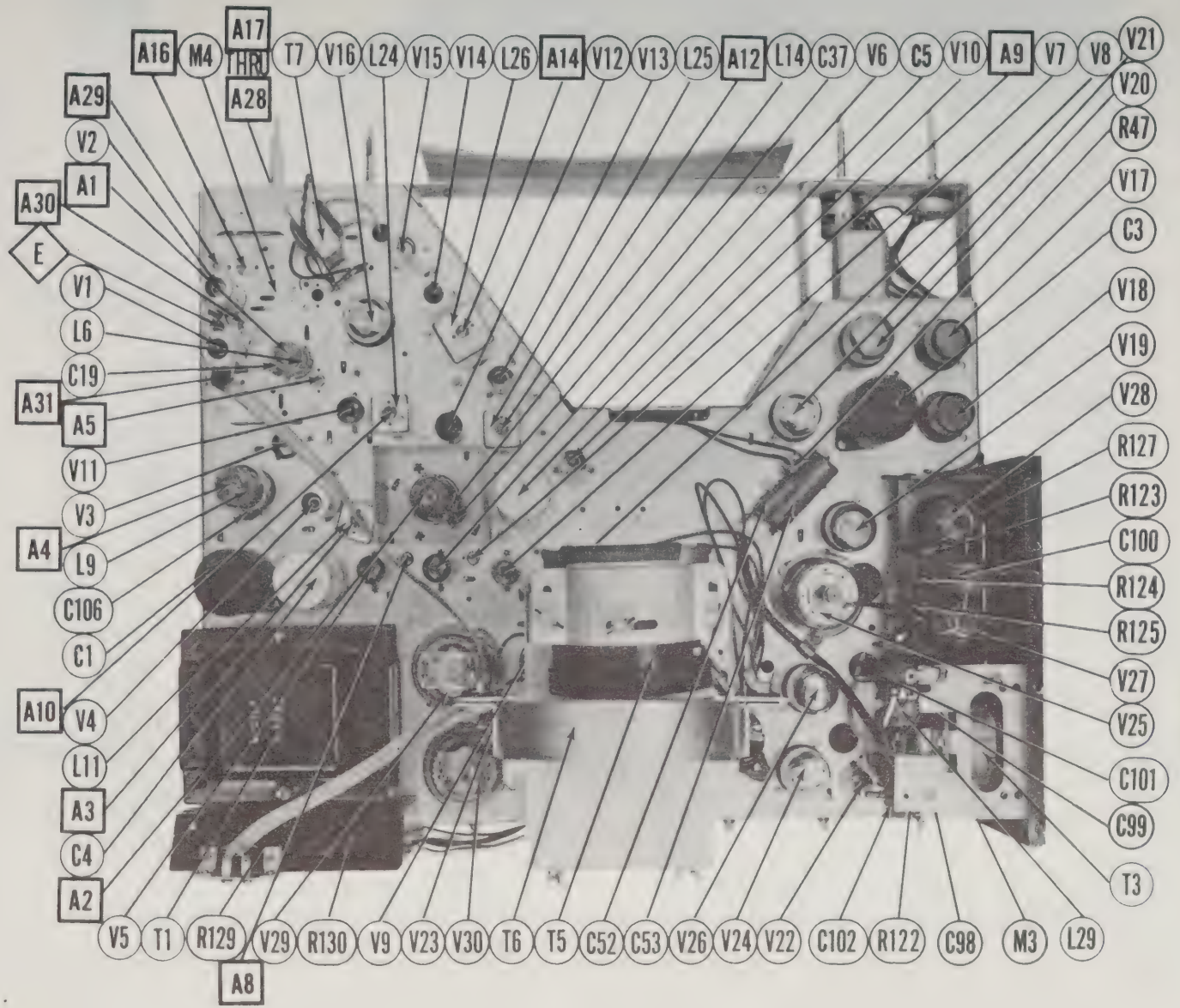

CHASSIS TOP VIEW

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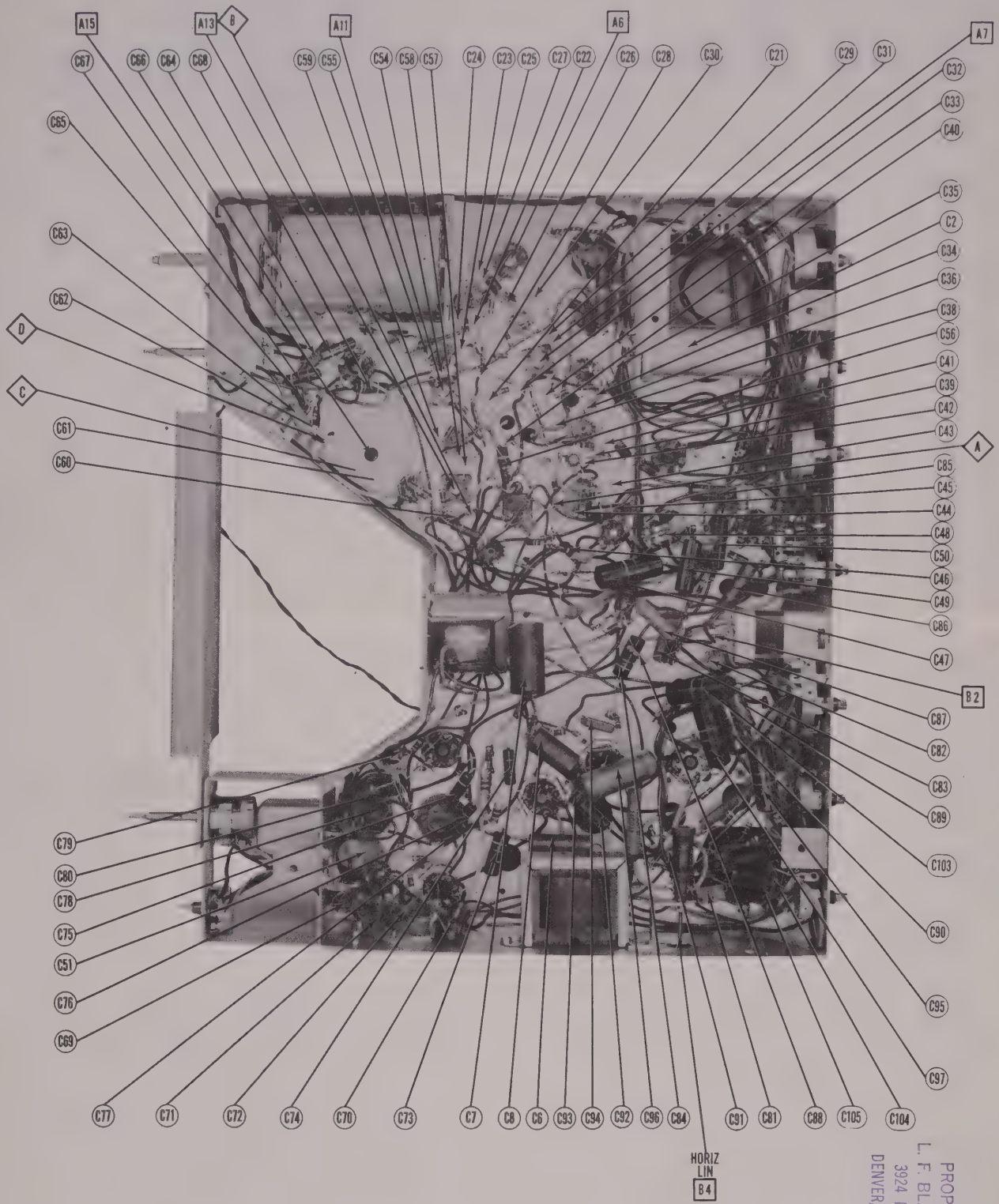

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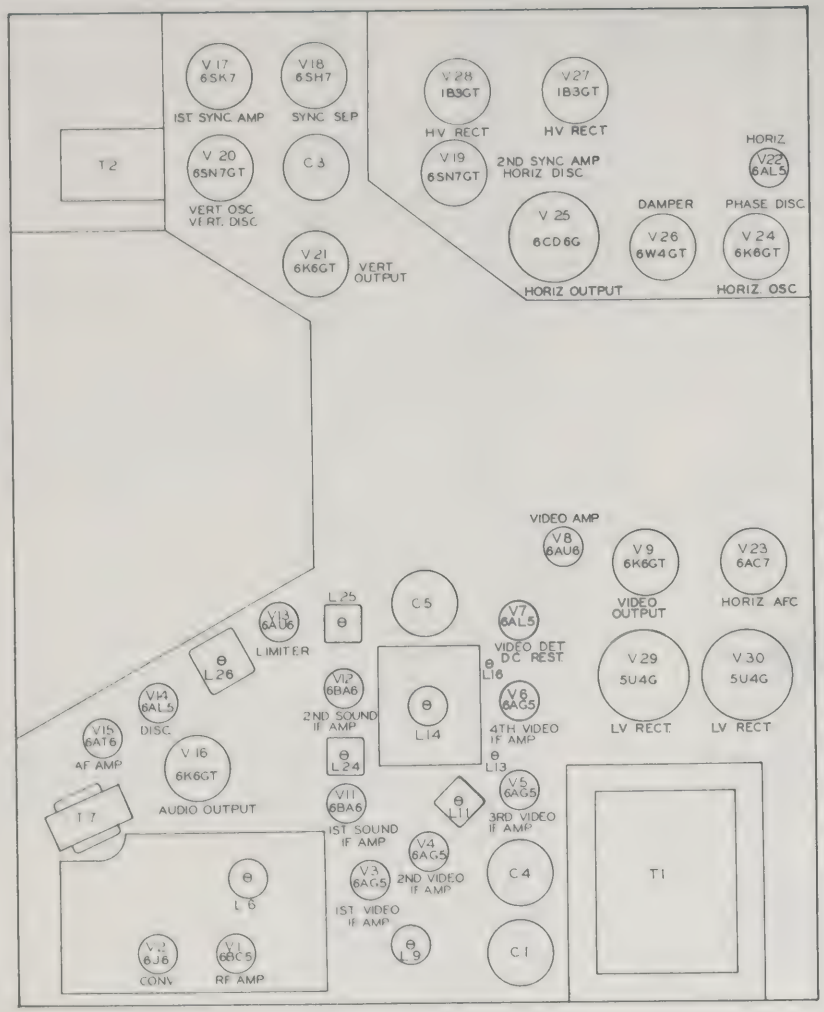
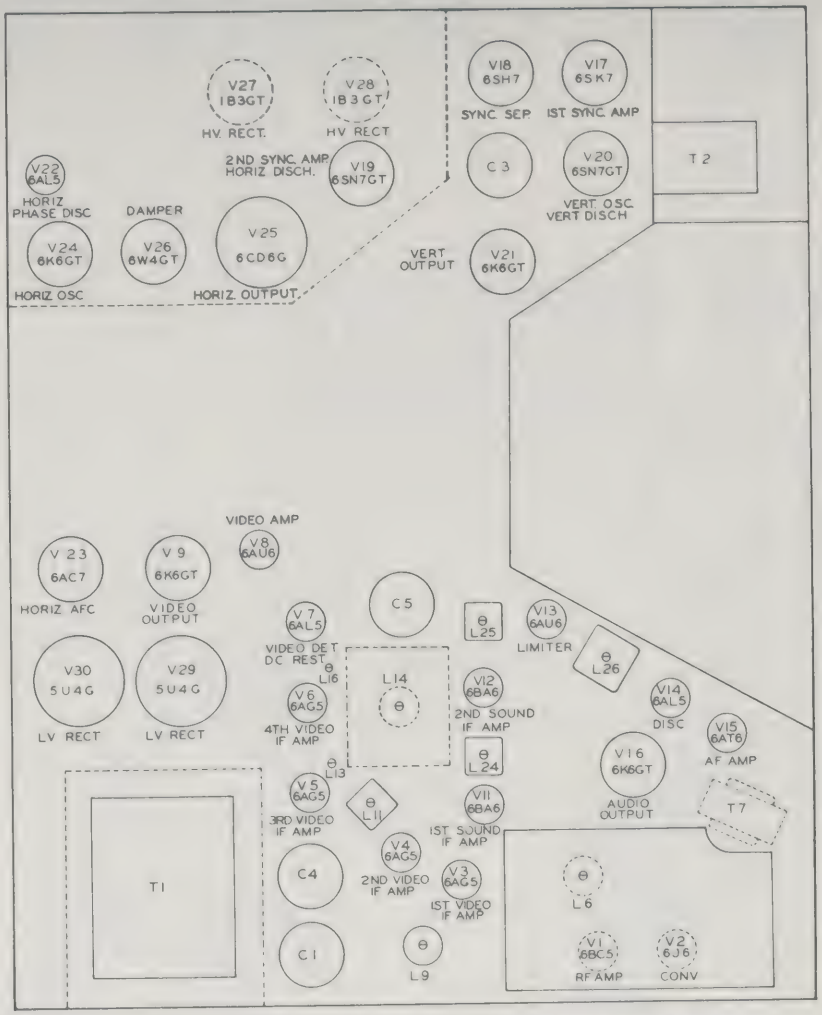
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

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TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace it with a 6J6 which has Pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.

Connect the negative lead of a 3 volt battery to the junction of R20 and C27, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.25MC (Unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	19.75MC	"	"	A3	"
3.	"	"	27.25MC	"	"	A4	"
4.	"	"	22.8MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	25.3MC	"	"	A6	"
6.	"	"	22.3MC	"	"	A7	"
7.	"	"	25.2MC	"	"	A8	"
8.	"	"	23.4MC	"	"	A9	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.25MC 22.25MC 25.75MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A5 thru A9 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.25MC	Any	DC probe to Point (B). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
11.	"	"	"	"	DC probe thru 1 meg to Point (C). Common to chassis.	A14	"
12.	"	"	"	"	DC probe to Point (D). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to Pin 1 (grid) of 6BA6 (V12.). Low side to chassis.	21.25MC (450KC SWP)	21.25MC	Any	Vert. amp. to Point (B). Low side to chassis.	A12, A13	Adjust for maximum amplitude and symmetry as per figure 2.
11.	"	High side to Pin 1 (grid) of 6BA6 (V11). Low side to chassis.	"	"	"	"	A10, A11	"
12.	"	"	"	"	"	Vert. amp. to Point (D). Low side to chassis.	A15, A14	Adjust A15 so 21.25MC occurs at center of crossover lines as per figure 3. Adjust A14 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A16. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A16 will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment screws for each channel that is off frequency. The individual channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

The sweep generator output lead should be terminated with its charateristic impedance, usually 50 ohms.

Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	215.75MC (Unmod.)	13	DC probe to Point (D). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A18	
			203.75MC	11		A19	
			197.75MC	10		A20	
			191.75MC	9		A21	
			185.75MC	8		A22	
			179.75MC	7		A23	
			87.75MC	6		A24	
			81.75MC	5		A25	
			71.75MC	4		A26	
			65.75MC	3		A27	
			59.75MC	2		A28	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. to Point E. Low side to chassis.	A29,A30, A31	Adjust for response curve similar to figure 4. with markers above 90%.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 4. If markers fall below 70% on any channel make slight adjustment of A29, A30 and A31 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

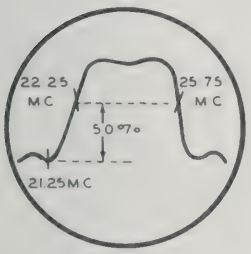


FIG. 1

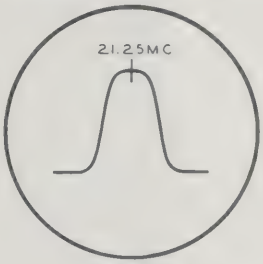


FIG. 2

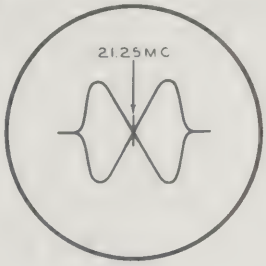


FIG. 3

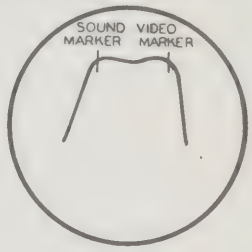


FIG. 4

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.5VDC -.2VDC	0V	6.3VAC	0V	65VDC	65VDC	0V		
V 2	6J6	55VDC	80VDC	6.3VAC	0V	-.8VDC	§-3.2VDC	0V		
V 3	6AG5	-.3VDC 0V	.2VDC	0V	6.3VAC	80VDC	80VDC	.2VDC		
V 4	6AG5	-.3VDC 0V	.2VDC	6.3VAC	0V	85VDC	85VDC	.2VDC		
V 5	6AG5	-.3VDC 0V	.2VDC	6.3VAC	0V	75VDC	90VDC	.2VDC		
V 6	6AG5	0V	1VDC	6.3VAC	0V	70VDC	100VDC	1VDC		
V 7	6AL5	0V	-80VDC	6.3VAC	0V	-70VDC	0V	-1.4VDC		
V 8	6AU6	-1.4VDC	0V	0V	6.3VAC	80VDC	55VDC	0V		
V 9	6K6GT	0V	0V	225VDC	100VDC	-2.5VDC	1.7VDC	6.3VAC	2.3VDC	
V 10	6AU6	75VDC	90VDC	0V	6.3VAC	-1.3VDC	250VDC	90VDC		
V 11	6BA6	0V	0V	0V	6.3VAC	90VDC	90VDC	1.2VDC		
V 12	6BA6	0V	0V	6.3VAC	0V	90VDC	85VDC	1.3VDC		
V 13	6AU6	-.3VDC	0V	0V	6.3VAC	35VDC	35VDC	0V		
V 14	6AL5	0V	-.3VDC	5.2VAC	0V	0V	0V	-.3VDC		
V 15	6AT6	-.3VDC	0V	0V	6.3VAC	0V	0V	65VDC		
V 16	6K6GT	0V	6.3VAC	215VDC	225VDC	0V	0V	0V	0V	
V 17	6SK7GT	0V	0V	0V	-1.2VDC	0V	90VDC	6.3VAC	180VDC	
V 18	6SH7	0V	0V	0V	-5.8VDC	0V	100VDC	6.3VAC	95VDC	
V 19	6SN7GT	-2.6VDC	70VDC	0V	-120VDC	140VDC -9VDC	-85VDC	6.3VAC	0V	
V 20	6SN7GT	-210VDC	205VDC	-85VDC	-210VDC	240VDC 4VDC	-85VDC	6.3VAC	0V	
V 21	6K6GT	0V	6.3VAC	400VDC 360VDC	400VDC 360VDC	-45VDC -35VDC	-45VDC -35VDC	0V	-60VDC -23VDC	
V 22	6AL5	-.9VDC	-7.3VDC	0V	6.3VAC	-2VDC	0V	-7.3VDC		
V 23	6AC7	0V	0V	0V	-1.1VDC	0V	90VDC	6.3VAC	195VDC	
V 24	6K6GT	0V	0V	165VDC	195VDC	-25VDC	0V	6.3VAC	.1VDC	
V 25	6CD6G	0V	6.3VAC	-30VDC	0V	-65VDC	-65VDC	0V	55VDC	Top Cap *
V 26	6W4GT	0V	0V	400VDC	0V	250VDC	0V	400VDC	400VDC	
V 27	1B3GT	* DO NOT MEASURE								
V 28	1B3GT	* DO NOT MEASURE								
V 29	5U4G	0V	255VDC	0V	255VAC	0V	255VAC	0V	255VDC	
V 30	5U4G	0V	255VDC	0V	255VAC	0V	255VAC	0V	255VDC	
V 31	16GP4	0V	-45VDC	PIN 10 240VDC	PIN 11 0Ω	PIN 12 6.3VAC				

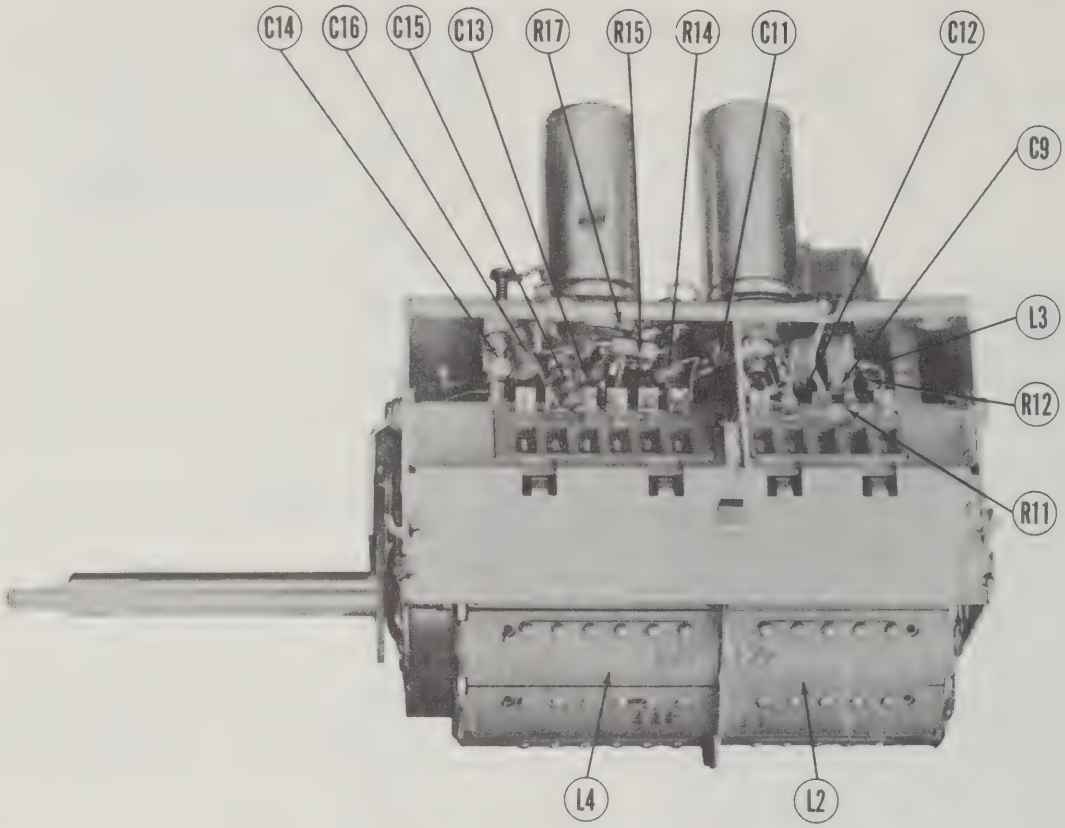
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
FOCUS CONTROL COUNTERCLOCKWISE
§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

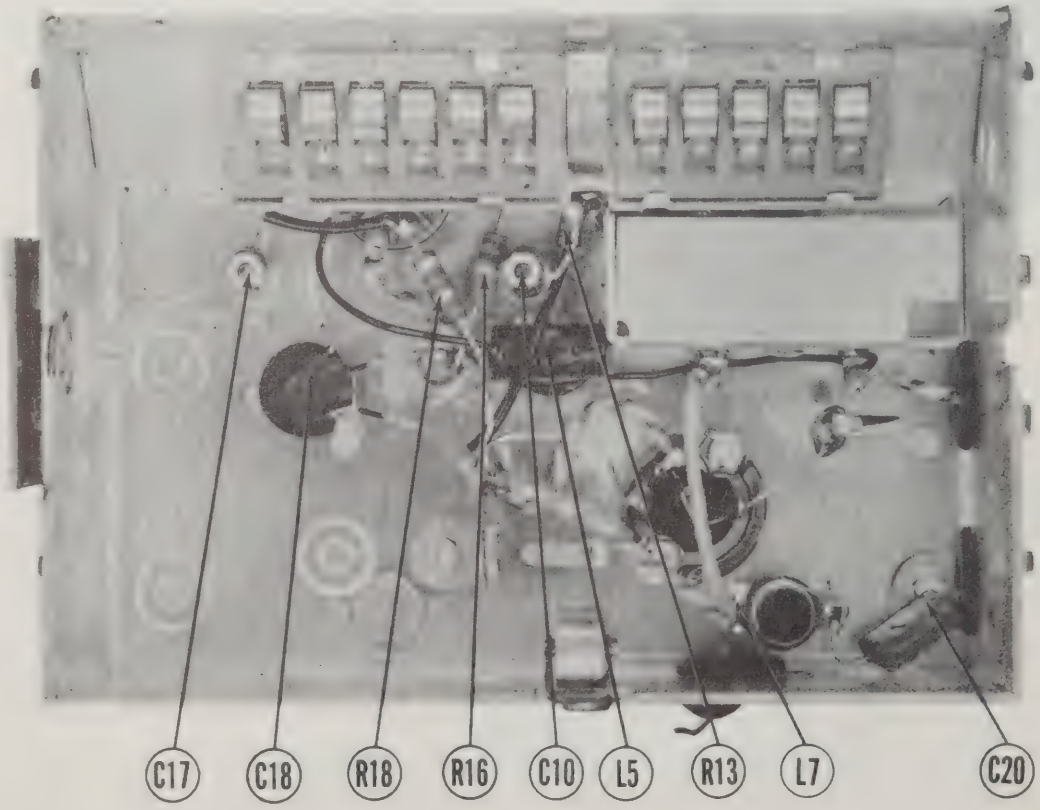
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	60KΩ 310KΩ	0Ω	.1Ω	0Ω	†4.2KΩ	†4.2KΩ	0Ω		
V 2	6J6	†6.7KΩ	†2KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AG5	12KΩ 260KΩ	39Ω	0Ω	.1Ω	†2.8KΩ	†2.8KΩ	39Ω		
V 4	6AG5	11KΩ 260KΩ	39Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	39Ω		
V 5	6AG5	4.7KΩ 255KΩ	39Ω	.1Ω	0Ω	†5.2KΩ	†2.5KΩ	39Ω		
V 6	6AG5	.3Ω	150Ω	.1Ω	0Ω	†7.9KΩ	†2.3KΩ	150Ω		
V 7	6AL5	.3Ω	240KΩ	.1Ω	0Ω	1.3Meg	0Ω	8.2KΩ		
V 8	6AU6	8.2KΩ	0Ω	0Ω	.1Ω	†13KΩ	†6.8KΩ	0Ω		
V 9	6K6GT	0Ω	0Ω	†3.3KΩ	†1.3KΩ	500KΩ	250Ω	.1Ω	330Ω	
V 10	6AU6	†100KΩ	†2.3KΩ	0Ω	.1Ω	100KΩ 350KΩ	†1KΩ	†2.3KΩ		
V 11	6BA6	0Ω	0Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	100Ω		
V 12	6BA6	470KΩ	0Ω	.1Ω	0Ω	†2.3KΩ	†4.6KΩ	100Ω		
V 13	6AU6	22KΩ	0Ω	0Ω	.1Ω	†7KΩ	†7KΩ	0Ω		
V 14	6AL5	200KΩ	100KΩ	1Ω	0Ω	0Ω	0Ω	100KΩ		
V 15	6AT6	10Meg	0Ω	0Ω	.1Ω	Inf.	Inf.	†330KΩ		
V 16	6K6GT	Inf.	.1Ω	†1.5KΩ	†1.1KΩ	270KΩ	280KΩ	0Ω	0Ω	
V 17	6SK7GT	0Ω	0Ω	0Ω	800KΩ	0Ω	†2.3KΩ	.1Ω	†10KΩ	
V 18	6SH7	0Ω	0Ω	0Ω	750KΩ	0Ω	†1.3KΩ	.1Ω	†8KΩ	
V 19	6SN7GT	1Meg	†8KΩ	0Ω	220KΩ	▲110KΩ ▲360KΩ	450Ω	.1Ω	0Ω	
V 20	6SN7GT	2Meg	†100KΩ	450Ω	2Meg	▲330KΩ ▲2 Meg	450Ω	.1Ω	0Ω	
V 21	6K6GT	Inf.	.1Ω	▲1.4KΩ	▲1.4KΩ	2.2Meg	5.5KΩ 450Ω	0Ω	6.5KΩ 1.5KΩ	
V 22	6AL5	950KΩ	1.5Meg	0Ω	1Ω	12Ω	0Ω	1.5Meg		
V 23	6AC7	0Ω	0Ω	0Ω	1.4Meg	10Ω	†18KΩ	.1Ω	†22KΩ	
V 24	6K6GT	Inf.	0Ω	†5KΩ	†10KΩ	80KΩ	Inf.	.1Ω	10Ω	
V 25	6CD6G	Inf.	.1Ω	750Ω	Inf.	470KΩ	470KΩ	0Ω	†20KΩ	Top Cap ▲55Ω
V 26	6W4GT	Inf.	Inf.	1Meg	Inf.	†23Ω †225Ω	Inf.	▲12Ω	▲12Ω	
V 27	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Top Cap ▲220Ω
V 28	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Top Cap Inf.
V 29	5U4G	Inf.	5KΩ	Inf.	465Ω	Inf.	465Ω	Inf.	5KΩ	
V 30	5U4G	Inf.	5KΩ	Inf.	465Ω	Inf.	465Ω	Inf.	5KΩ	
V 31	16GP4	0Ω	1.4Meg	PIN 10 †150KΩ	PIN 11 0Ω	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
FOCUS CONTROL COUNTERCLOCKWISE
† MEASURED FROM PIN 8 OF V30
▲ MEASURED FROM PIN 3 OF V26

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

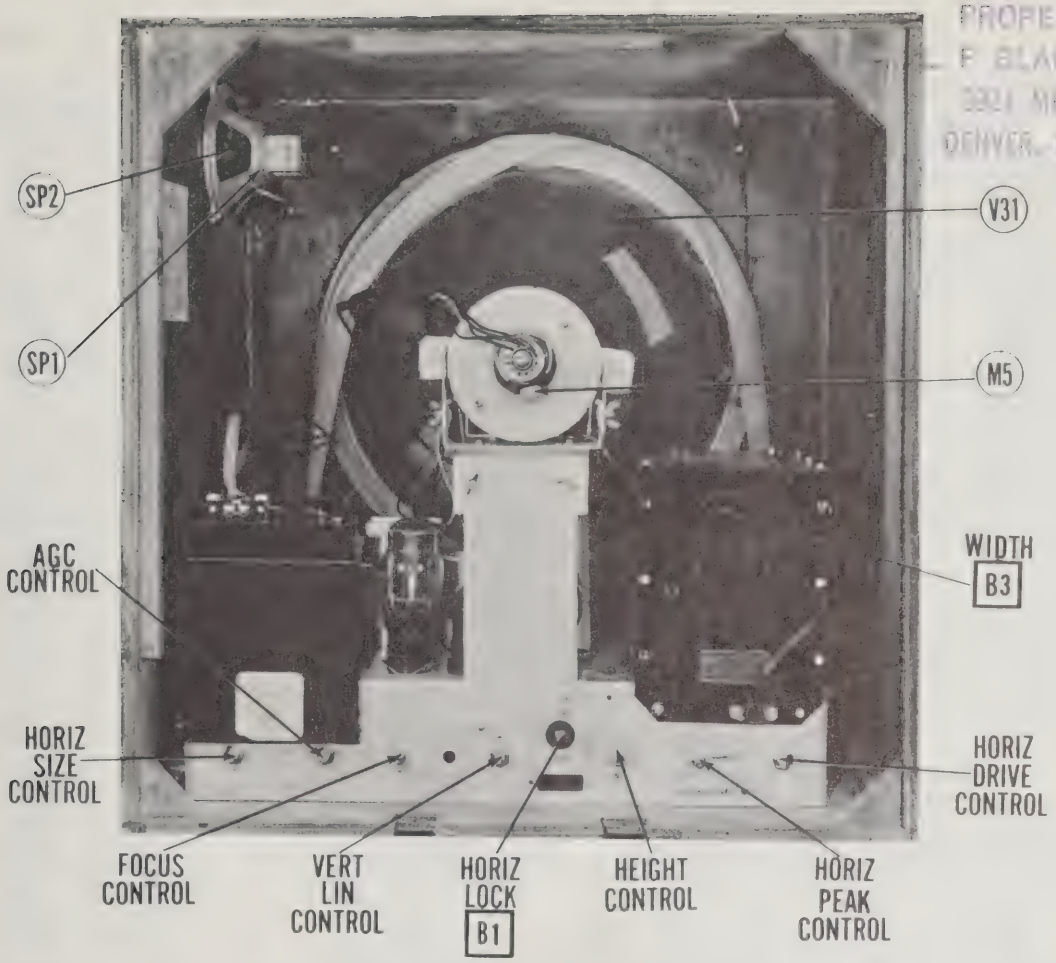


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
F. BLANKENSHIP
3321 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the set on and tune in a TV station, preferably a test pattern, and adjust the fine tuning control for best sound.
Turn the contrast control to slightly less than normal.
Turn the horizontal hold control to the mid-position of its range.
Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.
Adjust the horizontal phasing slug, (B2), until the blanking bar which may appear in the picture moves to the right and off the raster. If ripples occur in the raster, adjust B2 clockwise until the unstable condition is removed. The length of this adjustment is normally about 1/2 inches beyond the bushing.
Turn the hold control to fully counter-clockwise and adjust B1 clockwise until the picture falls out of synchronization. Now, turn B1 slowly counter-clockwise to the point where the picture pulls into sync. Readjust B2 so the left side of the picture is close to the left side of the raster, but does not fold over.
Turn the hold control fully clockwise. The right side of the picture should be near the right side of the raster but does not fold over. If it does, readjust B2.
Momentarily interrupt the signal by switching to another channel and back again. The picture should pull into sync. If it does not, readjust B1 counter-clocwise until the picture pulls into sync.
Turn the hold control fully counter-clockwise. The picture should pull into sync after momentary removal of the signal.
It may not be possible to obtain synchronization over the entire range of the hold control, however, if the picture synchronizes over at least 3/4 of the controls rotation, operation will be satisfactory.

HORIZONTAL LINEARITY ADJUSTMENTS

Turn the horizontal peaking control clockwise as far as possible without crowding the right side of the picture.
Adjust the width slug, (B3), until the picture is of proper size horizontally.
Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right. Slight readjustment of the peaking control may be required for optimum linearity.

DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect speaker socket.
4. Remove four 7/16" hex head bolts from chassis. Remove chassis.
5. Remove two wood screws from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINE ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILMORE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier		6BC5	7BD	
B	RF Amplifier		6CB6	6CK	
C	RF Amplifier		6AG5	7BD	
V2	Converter		6J8	7BF	
V3	1st. Video IF Amp.		6AG5	7BD	
V4	2nd. Video IF Amp.		6AG5	7BD	
V5	3rd. Video IF Amp.		6AG5	7BD	
V6	4th. Video IF Amp.		6AG5	7BD	
V7	Video Detector-DC Restorer		6AL5	6BT	
V8	Video Amplifier		6AU6	7BK	
V9	Video Output		6K6GT	7S	
V10	AGC Keying		6AU6	7BK	
V11	1st. Sound IF Amp.		6BA6	7BK	
V12	2nd. Sound IF Amp.		6BA6	7BK	
V13	Limiter		6AU6	7BK	
V14	Discriminator		6AL5	6BT	
V15	AF Amplifier		6AT6	7BT	
V16	Audio Output		6K6GT	7S	
V17	1st. Sync. Amplifier		6SK7GT	8N	
V18	Sync. Sepparator		6SH7	8BK	
V19	2nd. Sync. Amp.-Horiz. Discharge		6SN7GT	8BD	
V20	Vert. Oscillator-Vert. Discharge		6SN7GT	8BD	
V21	Vert. Output		6K6GT	7S	
V22	Horiz. Phase Discriminator		6AL5	6BT	
V23	Horiz. AFC		6AC7	8N	
V24	Horiz. Oscillator		6K6GT	7S	
V25	Horiz. Output		6CD6G	5BT	
V26	Damper		6W4GT	4CG	
V27	HV Rectifier		1B3GT	3C	
V28	HV Rectifier		1B3GT	3C	
V29	LV Rectifier		5U4G	5T	
V30	LV Rectifier		5U4G	5T	
V31	Picture Tube		16GP4	13D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILMORE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AFH82J16D		UPT4145 - 820		TVL-3761	▲ Filter ■ Decoupling
B	10	450							▲ Filter
C	80	150				UPT4145		TVL-3785	▲ Filter ■ Filter
C2A	40	450		AFH882J					▲ Decoupling
B	40	450						TVL-2710	▲ Filter
C	10	450				UPT80 - 45V5			▲ Vert. Output Cathode
C3A	80	450		AFH16J10B					▲ Output Dec.
B	50	50				UPT345 - 835		TVL-2730	▲ Filter
C4A	30	350		AFH47J6H					▲ Filter
B	80	350				UPT41145		TVL-3772	■ Decoupling
C5A	40	450		AFH82J2H					▲ Decoupling
B	10	450							▲ Decoupling
C	10	350						TVA-1702	Vert. Osc. Dec.
C6	4	450		PRS450/4		BR445		TVA-1702	Decoupling
C7	20	300		PRS350/24		BR2035A		TVA-1608	Hor. Output Cathode
C8	5	50		PRS150/4		BR550		TVA-1303	Variable Trimmer
C9	3-9				829-3				Variable Trimmer
C10	.5-3				829-3				RF Amp. Dec.
C11	120			SH20	D6-121		GP2K-120	19C29	RF Amp. Fil.
C12	1000			BPD-001	DD-102		801-001	19C1	RF Coupling
C13	100			SH100N750	TCN-100		N750K-100	29C16	Variable Trimmer
C14	.5-3				829-3				Osc. Grid Cap.
C15	20			SH20NP0	TCZ-20		NP0K-20		Fixed Trimmer
C16	10			SH10N750	TCN-10		N750K-10	19C4	Variable Trimmer
C17	.5-3				829-3				RF Bypass
C18A	1000			BPD-2X001	DD-2-102		813-2X001	29C7	Conv. Fil. Bypass
B	1000								Fixed Trimmer
C19	68	500			TCZ-68		NP0M-68	38C9	RF Coupling
C20	120	500		SH20	D6-121		GP2K-120	19C29	AGC Filter
C21	1500			SH1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C22	1500			SH1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C23	1500			SH1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C24	1500			SH1500	D6-152	1W5D15	GP2L-0015	29C8	1st. V. IF Dec.
C25	1500			SH1500	D6-152	1W5D15	GP2L-0015	29C8	1st. V. IF Fil.
C26	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	IF Coupling
C27	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C28	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C29	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd. V. IF Dec.
C30	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd. V. IF Fil.
C31	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	IF Coupling
C32	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	AGC Filter
C33	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C34	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	3rd. V. IF Dec.
C35	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	3rd. V. IF Fil.
C36	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	IF Coupling
C37	75	500		1469-000075	TCZ-75		NP0M-75		Fixed Trimmer
C38	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C39	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th. V. IF Dec.
C40	82			SI82	TCN-82	5W5T1	GP1K-82	19C11	4th. V. IF Cathode
C41	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	4th. V. IF Fil.
C42	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	IF Coupling
C43	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	V. Det.-DC Res. Fil.
C44	10			SI10	D6-100	5W5Q1	GP1K-10	19C10	V. Diode Filter
C45	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	1st. V. Amp. Screen
C46	100	500		1469-0001	TCZ-100	5R5T1	NP0M-100	MS-31	Peaking
C47	.1	900		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C48	390	500		1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	2nd. V. Amp. Cathode
C49	.047	900		P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C50	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C51	.25	400		P488-25		GT4P25		4TM-P25	Decoupling
C52	.001	1000		P1088-001		PTE16D1		MD-D1	Hor. Sweep Coupling
C53	.4	400		884-5		GT4P5		4TM-P5	AGC Filter

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILMORE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st. S. IF Dec.
C55	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	1st. S. IF Cathode
C56	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	2nd. S. IF Grid
C57	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd. S. IF Plate Dec.
C58	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd. S. IF Screen
C59	1500			SI1500	D6-152	1W5D15	GP2L-0015	29C8	2nd. S. IF Cathode
C60	51			SI50	D6-500	5W5Q5	GP1K-50	19C28	Limiter Grid Filter
C61	6800			P688-0068	D6-682	PTE6D6	821-01	36C14	Limiter Decoupling
C62	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	RF Bypass
C63	.0025	600		P688-0025	D6-252	PTE6D3	GP2M-0025	6TM-D22	Audio Coupling
C64	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Tone Comp.
C65	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C66	.0025	600		1467-0025	D6-252	1W5D25	GP2M-0025	1FM-225	De-emphasis
C67	.0047	400		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Audio Coupling
C68	.0047	600		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Output Plate
C69	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C70	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	1st. Sync. Amp. Dec.
C71	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	1st. Sync. Amp. Plate
C72	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	Sync. Coupling
C73	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C74	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Vert. Sync. Coupling
C75	.0022	600		P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Integrator Net.
C76	.0047	400		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net.
C77	.0047	400		P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net.
C78	4700	500		1467-005	D6-472	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid
C79	.047	600		P688-047		PTE6S5		6TM-S47	Vert. Discharge
C80	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C81	82	1500							Hor. Sync. Coupling
C82	.015	400		P488-015		PTE6S15		6TM-S15	Fixed Trimmer
C83	.004	1000		P1088-004		PTE16D4		MB-D4	AFC Filter
C84	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	AFC Filter
C85	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Hor. AFC Screen
C86	.004	1000		P1088-004		PTE16D4		MB-D4	Hor. AFC Coupling
C87	.015	400		P488-015		PTE4S15		6TM-S15	Phase Shifter
C88	1200			SI1200	D6-122		GP2L-0012		Phase Shifter
C89	.004	1000		P1088-004		PTE16D4		MB-D4	Hor. Osc. Grid
C90	.047	600		P688-047	DF-503	PTE6S5		6TM-S47	Hor. Osc. Screen
C91	390	1000							Differentiator Net.
C92	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Hor. Sweep Coupling
C93	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Hor. Sweep Coupling
C94	2000	500		1464-002		1DR5D4		MS-32	Hor. Discharge
C95	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Hor. Disch. Dec.
C96	.25	400		P488-25		GT4P25		4TM-P25	Hor. Output Screen
C97	.1	600		P688-1		PTE6P1		6TM-P1	Damper Filter
C98	.03	600		P688-03		PTE6S3		6TM-S3	Damper Filter
C99	1500	500		1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	Fixed Trimmer
C100	500	10000		HV10B	TV1-501				Voltage Doubler Cap.
C101	500	10000		HV10B	TV1-501				H. V. Filter
C102	500	10000		HV10B	TV1-501				H. V. Filter
C103	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Hor. Sweep Coupling
C104	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter
C105	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILMORE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	50KΩ	½		Q11-123	AM-44-S	B-31	Brightness Control
B	Shaft			Not Req	RS-3	Not Req	Attach to R1A per instructions
R2A	1Meg	½		Concentrikit B11-137 #	RTV-2		Vert Hold Control - Front
B	50KΩ	½		B11-123 #			Horiz. Hold Control - Rear
C	Shaft End			E-187 #			Attach per instructions in CONCENTRIKIT
R3A	1000Ω	½		Concentrikit B11-108 #	RTV-87		Contrast Control - Front
B	1Meg	½		B13-137X #			Volume Control - Rapped @ 250KΩ - Rear
C	Shaft End			E-187 #			Attach per instructions in CONCENTRIKIT
D	Switch			76-1 #			Attach per instructions in CONCENTRIKIT
R4	200Ω	4			RTV-60	SVP-984	Horiz. Size Control - Wire Wound
R5A	250KΩ	½		Q11-130	AG-55-S	AB-50	AGC Control
B	Shaft			Not Req	FKS-1/4	AK-1	Attach to R5A per instructions
R6	1500Ω	4			RTV-8		Focus Control - Wire Wound
R7A	5000Ω	½		Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft			Not Req	FKS-1/4	AK-1	Attach to R7A per instructions
R8A	2.5Meg	½		Q11-239	AM-84-S	AN-83	Height Control
B	Shaft			Not Req	FKS-1/4	AK-1	Attach to R8A per instructions
R9A	250KΩ	½		Q11-130	AM-55-S	AN-50	Horiz. Drive Control
B	Shaft			Not Req	FKS-1/4	AK-1	Attach to R9A per instructions
R10A	5000Ω	½		Q11-114	AM-19-S	AN-10	Horiz. Peaking Control
B	Shaft			Not Req	FKS-1/4	AK-1	Attach to R10A per instructions

Additional parts to be used with CONCENTRIKIT

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILMORE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R11	3900Ω	½		BTS-3900	Antenna Coil Shunt
R12	47KΩ	½		BTS-47K	AGC Network
R13	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R14	10KΩ 20%	½		BTS-10K	RF Coil Shunt
R15	4700Ω 20%	½		BTS-4700	Mixer Grid
R16	220KΩ 20%	½		BTS-220K	Mixer Grid
R17	10KΩ	½		BTS-10K	Osc. Grid
R18	4700Ω	½		BTS-4700	Osc. Plate
R19	150Ω	½		BTS-150	Decoupling
R20	1000Ω	½		BTS-1000	AGC Network
R21	1000Ω	½		BTS-1000	AGC Network
R22	10KΩ	½		BTS-10K	AGC Network
R23	10KΩ	½			1st. Video IF Amp. Grid
R24	39Ω	½			1st. Video IF Amp. Cathode
R25	1000Ω	½		BTS-1000	1st. Video IF Amp. Decoupling
R26	150Ω	½		BTS-150	Decoupling
R27	10KΩ	½			2nd. Video IF Amp. Grid
R28	39Ω	½			2nd. Video IF Amp. Cathode
R29	1000Ω	½		BTS-1000	2nd. Video IF Amp. Decoupling
R30	150Ω	½		BTS-150	Decoupling

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILMORE PART No.	IRC PART No.	IDENTIFICATION CODES
R31	4700Ω	½		BTS-4700	3rd. Video IF Amp. Grid
R32	39Ω	½			3rd. Video IF Amp. Cathode
R33	2700Ω	½		BTS-2700	3rd. Video IF Amp. Plate
R34	1000Ω	½		BTS-1000	3rd. Video IF Amp. Decoupling
R35	150Ω	½		BTS-150	Decoupling
R36	150Ω	½		BTS-150	4th. Video IF Amp. Cathode
R37	5600Ω	½		BTS-5600	4th. Video IF Amp. Plate
R38	1000Ω	½		BTS-1000	4th. Video IF Amp. Decoupling
R39	8200Ω	½		BTS-8200	Vidoe Det. Diode Load
R40	6800Ω	½		BTS-6800	Video Amp. Screen
R41	4700Ω	½		BTS-4700	Video Amp. Plate
R42	12KΩ	½		BTS-12K	Voltage Divider
R43	5600Ω	½		BTS-5600	Voltage Divider
R44	100KΩ	2		BTS-100K	Isolation
R45	1000Ω	1		BTA-1000	Decoupling
R46	1000Ω	½		BTS-1000	AGC Keying Screen
R47	100KΩ	½		BTS-100K	AGC Network
R48	1.2Meg	½		BTS-1.2Meg	Bias Network
R49	820KΩ	½		BTS-820K	Video Output Grid
R50	82Ω	1			Video Output Cathode
R51	330Ω	½		BTS-330	Video Output Cathode
R52	3300Ω	1		BTA-3300	Video Output Plate
R53	10KΩ	½		BTS-10K	Isolation
R54	1Meg	½		BTS-1Meg	DC Restorer Load
R55	47KΩ	½		BTS-47K	Voltage Divider
R56	150KΩ	½		BTS-150K	Voltage Divider
R57	100KΩ	½		BTS-100K	Picture Tube Grid
R58	150KΩ	½		BTS-150K	Acc. Anode Load
C59	100Ω			BTS-100	1st. Sound IF Amp. Cathode
R60	1000Ω	½		BTS-1000	1st. Sound IF Amp. Decoupling
R61	470KΩ	½		BTS-470K	2nd. Sound IF Amp. Grid
R62	100Ω	½		BTS-100	2nd. Sound IF Amp. Cathode
R63	3300Ω	½		BTS-3300	2nd. Sound IF Amp. Screen
R64	1000Ω	½		BTS-1000	2nd. Sound IF Amp. Plate Decoupling
R65	22KΩ	1		BTS-22K	3rd. Sound IF Amp. Grid
R66	10KΩ	1		BTA-10K	3rd Sound IF Amp. Decoupling
R67	10KΩ	½		BTS-10K	Voltage Divider
R68	100KΩ	½		BTS-100K	Disc. Diode Load
R69	100KΩ	½		BTS-100K	Disc. Diode Load
R70	2.2Ω	1		BW-1-2.2	Diode Filament
R71	22KΩ	½		BTS-22K	De-emphasis
R72	27KΩ	½		BTS-27K	Tone Compensation
R73	10Meg	½		BTS-10Meg	AF Amp. Grid
R74	330KΩ	½		BTS-330K	AF Amp. Plate
R75	270KΩ	½		BTS-270K	Output Grid
R76	2200Ω	2		BTB-2200	Output Decoupling
R77	2200Ω	2		BTB-2200	Output Decoupling
R78	1Meg	½		BTS-1Meg	1st. Sync. Amp. Grid
R79	6.8Meg	½		BTS-6.8Meg	Bias Network
R80	4700Ω	1		BTA-4700	1st. Sync. Amp. Plate
R81	4700Ω	1		BTA-4700	1st. Sync. Amp. Plate Decoupling
R82	4.7Meg	½		BTS-4.7Meg	Bias Network
R83	1Meg	½		BTS-1Meg	Sync. Sep. Grid
R84	6800Ω	½		BTS-6800	Sync. Sep Plate
R85	1Meg	½		BTS-1Meg	2nd. Sync. Amp. Grid
R86	4700Ω	½		BTS-4700	2nd. Sync Amp. Plate
R87	1000Ω	½		BTS-1000	Decoupling
R88	22KΩ	½		BTS-22K	Voltage Divider
R89	22KΩ	½		BTS-22K	Integrator
R90	8200Ω	½		BTS-8200	Integrator
R91	8200Ω	½		BTS-8200	Integrator
R92	820KΩ	½		BTS-820K	Vert. Osc. Grid - See Note 1
R93	100KΩ	½		BTS-100K	Vert. Osc. Plate
R94	100KΩ	½		BTS-100K	Voltage Divider
R95	2.2Meg	½		BTS-2.2Meg	Voltage Divider
R96	330KΩ	½		BTS-330K	Vert. Disch. Plate
R97	4700Ω	½		BTS-4700	Vert. Peaking
R98	2.2Meg	½		BTS-2.2Meg	Vert. Output Grid
R99	1000Ω	1		BTA-1000	Vert. Output Cathode
R100	470KΩ	½		BTS-470K	Horiz. Phase Disc. Diode Load
R101	470KΩ	½		BTS-470K	Horiz. Phase Disc. Diode Load
R102	1Meg	½		BTS-1Meg	Horiz. Phase Disc. Diode Load
R103	470KΩ	½		BTS-470K	Horiz. AFC Filter
R104	560Ω	½			Parasitic Suppressor
R105	10Ω	½			Horiz. AFC Cathode
R106	39KΩ	1		BTA-39K	Horiz. AFC Screen
R107	47KΩ	1		BTA-47K	Horiz. AFC Plate
R108	39KΩ	1		BTA-39K	Horiz. AFC Plate
R109	27KΩ	1		BTA-27K	Voltage Divider
R110	27KΩ	½		BTS-27K	Horiz. Osc. Grid
R111	10KΩ	1		BTA-10K	Horiz. Osc. Screen
R112	5000Ω	5		1 3/4A-5000	Horiz. Osc. Plate - Wire Wound
R113	6800Ω	½		BTS-6800	Horiz. Disch.
R114	220KΩ	½		BTS-220K	Horiz. Disch. Grid
R115	100KΩ	½		BTS-100K	Horiz. Disch. Plate
R116	10KΩ	1		BTA-10K	Horiz. Disch Plate Decoupling
R117	4700Ω	½		BTS-4700	Horiz. Peaking
R118	100Ω 20%	½			Parasitic Suppressor
R119	470KΩ	2		BTS-470K	Horiz. Output Grid
R120	300Ω	10		1 3/4A-300	Horiz. Output Cathode - Wire Wound
R121	20KΩ	10		1 3/4A-20K	Horiz. Output Screen - Wire Wound
R122	1000Ω	1		BTA-1000	Horiz. Linearity Coil Shunt
R123	680KΩ	2			HV Rectifier Diode Load - See Note 2
R124	680KΩ	2			HV Rectifier Diode Load - See Note 2
R125	680KΩ	2			HV Rectifier Diode Load - See Note 2
R126	500KΩ	2			HV Rectifier Diode Load - See Note 3
R127	270KΩ	1			HV Filter
R128	270Ω	2		BW-2-270	Focus Coil Shunt
R129A	6750Ω	15			Voltage Divider - Wire Wound
B	12Ω				Voltage Divider - Wire Wound
C	93Ω				Voltage Divider - Wire Wound
R130A	1360Ω	25			Voltage Divider - Wire Wound
B	230Ω	25			Voltage Divider - Wire Wound

Note 1 Some models use 1Meg Resistor in this application
Note 2 Some models use 500KΩ Resistor in this application
Note 3 Not used in all models

PROPERTY OF:
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILMORE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.7A	720VCT .350ADC	5VAC @ 6A	12.6VAC @ 6A SEC. 4 6.3VAC @ 1.2A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		PHILMORE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T2	160Ω	900Ω		A-8121	A-3000	TB0-1	Vert. Block Osc. Trans.
T3	215Ω Tap 50Ω	60Ω Tap 10Ω SEC. 2 .5Ω SEC. 3 0Ω SEC. 4					Horiz. Output Trans.
T4	11.6KΩ	11.4Ω		A-8112	A-3036		Vert. Output Trans.
T5A	17.5Ω			DY-7			Horiz. Defelection Coil
B	48.5Ω						Vert. Defelection Coil
T6	450Ω						Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILMORE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	6.5KΩ	3.5Ω	455Ω	.7Ω		A-3878 ①	A-2931	R0-13 ①	① Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PHILMORE PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.5Ω		57J9	57A1	
	CONE DIA.	V. C. DIA.				
SP2	5X7"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	PHILMORE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.350A	23.5Ω	1 Henry		C-2326	C-2996 ①	TR-3300 ①	① Drill one new mounting hole

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	PHILMORE PART No.	MEISSNER PART No.	IRC PART No.	
L2	Ant. Coil	0Ω	0Ω				
L3	Fil. Choke	0Ω					
L4	RF Mixer Grid & Osc. Coils	0Ω					
L5	Fil. Choke	0Ω					
L6	Conv. Plate - Sound Take Off Coil	1.9Ω	0Ω				
L7	1st. Video IF	1.4Ω					
L8	Fil. Choke	0Ω					
L9	2nd. Video IF	.3Ω					Includes Trap
L10	Fil. Choke	0Ω					
L11	3rd. Video IF	.3Ω	.1Ω				Includes Trap
L12	Fil. Choke	0Ω					
L13	4th. Video IF	.3Ω					
L14	Sound Trap	.1Ω					
L15	Fil. Choke	0Ω					
L16	5th. Video IF	.3Ω					
L17	Fil. Choke	0Ω					
L18	Peaking	6.3Ω					Wound on 39KΩ Resistor White Dot
L19	Peaking	8Ω					Green Dot
L20	Peaking	5.2Ω					Wound on 22KΩ Resistor
L21	Peaking	4.4Ω					Red Dot
L22	Peaking	6.3Ω					Wound on 22KΩ Resistor
L23	Peaking	4.4Ω					Red Dot
L24	1st. Sound IF	.1Ω	.1Ω				
L25	2nd. Sound IF	.1Ω	.1Ω				
L26	Disc. Trans.	.1Ω	.2Ω				
L27	Horiz. Phase Disc. Trans.	45Ω	38Ω				
L28	Horiz. Lin.	5.8Ω					
L29	Width Coil	50Ω	2.3Ω				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			PHILMORE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	6 Amp.			312006		
M2	3AG	6 Amp.			312006		
M3	3AG Pigtail	.250A			318.250		

MISCELLANEOUS

ITEM No.	PART NAME	PHILMORE PART No.	NOTES
M4	RF Tuner		
M5	Ion Trap		

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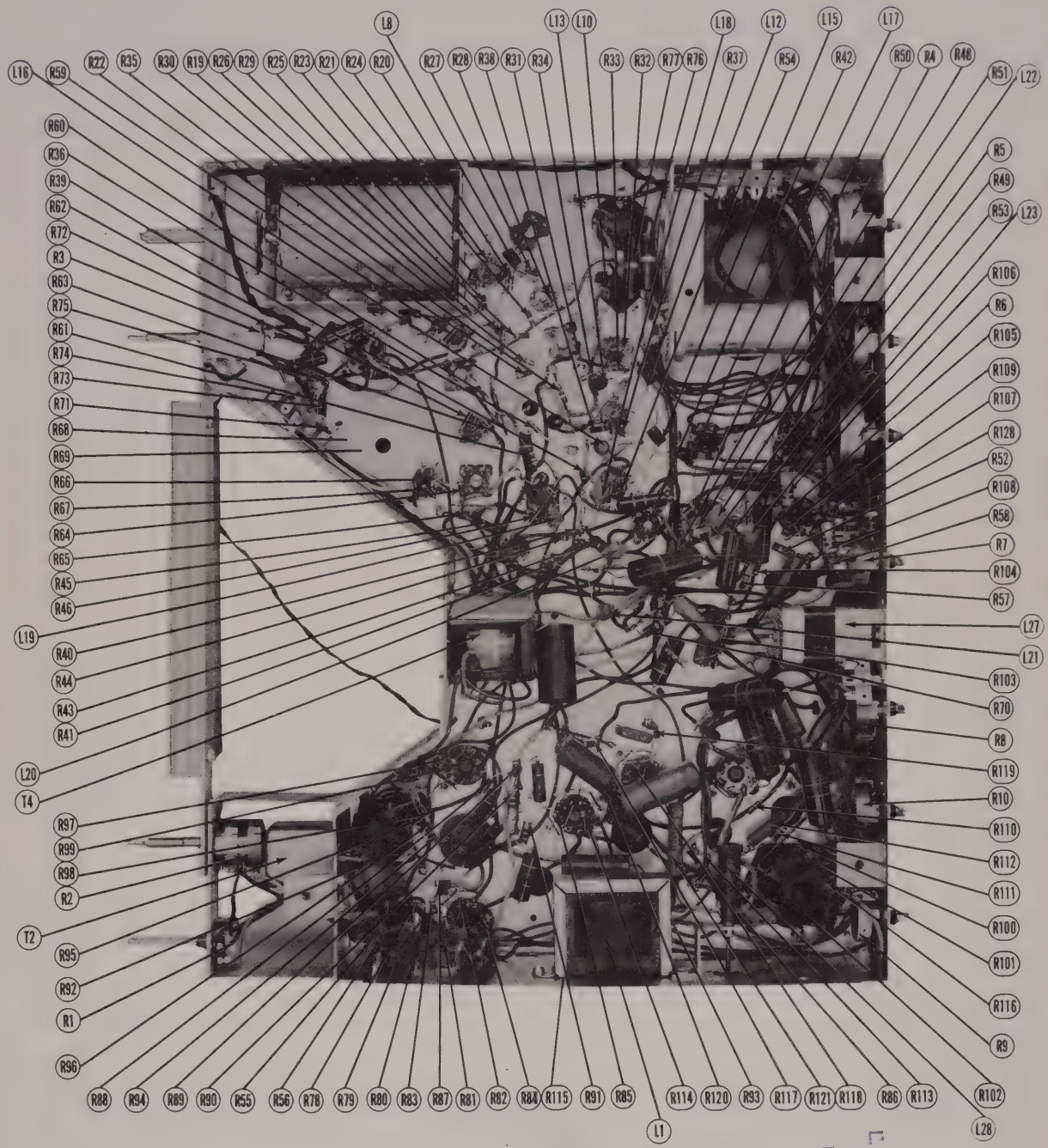

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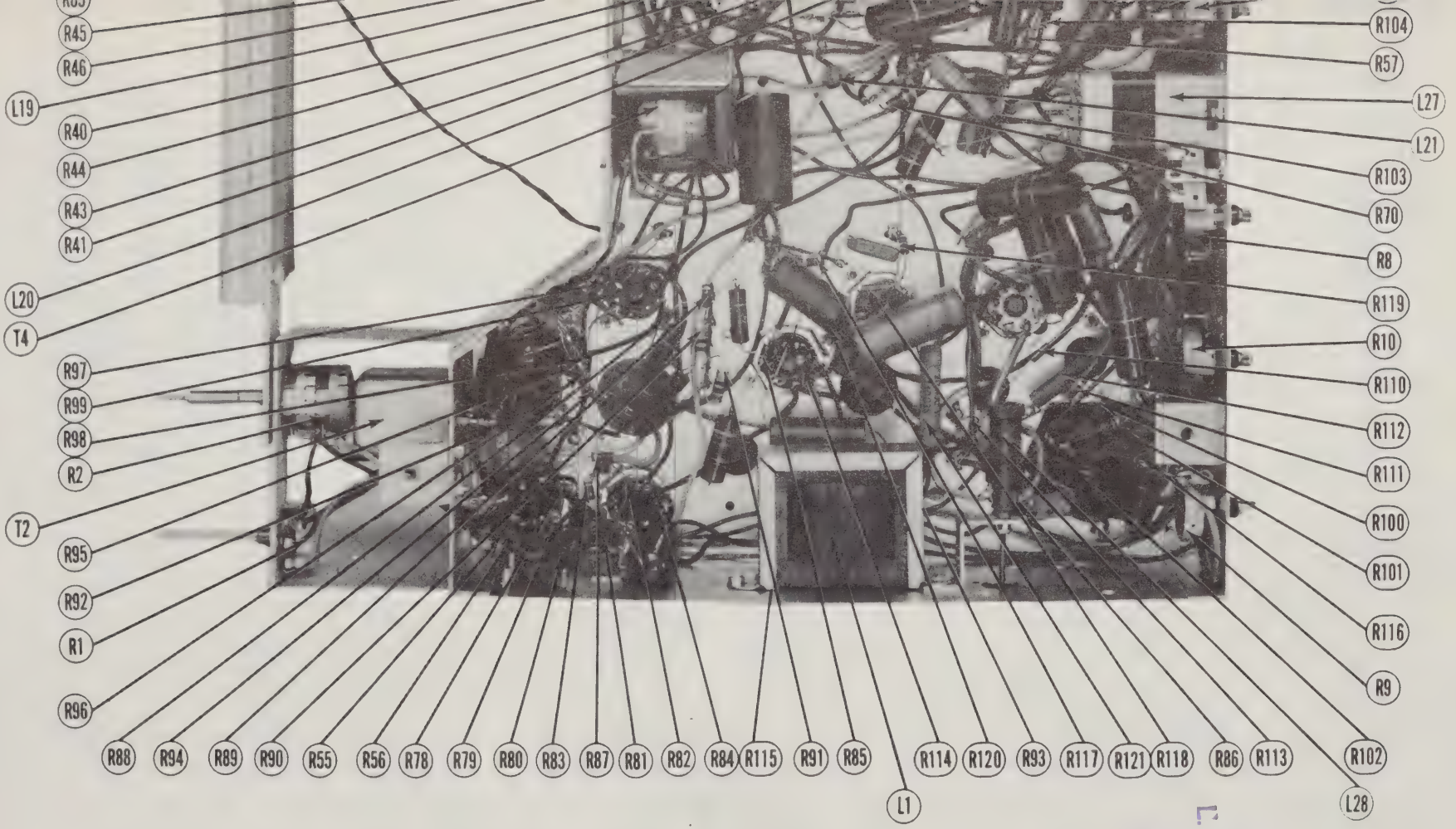
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



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RCA VICTOR
MODEL B-411 (Ch. RC1098)

RCA VICTOR
MODEL B-411 (Ch. RC1098)

RCA VICTOR MODEL B-411

TRADE NAME	RCA Victor, Model B-411 (Ch. RC1098)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	Battery Operated Portable Superheterodyne Receiver With Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 Det.-AVC-AF, 3V4 Power Output
POWER SUPPLY	1.5 Volts "A" Supply And 67.5 Volts "B" Supply
RATING	.225 Amp. @ 1.5 Volts DC And 9.8 MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to stator on rear section of tuning gang. Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Replace set in cabinet and replace the tuning knob.						
3.		Loop	1500KC	1500KC	Across voice coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	600KC	600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 3 and 4 until no further improvement can be made.
5.	The antenna circuit is adjusted by sliding the antenna coil up or down on the "ferrite" rod. The coil has been properly adjusted and sealed at the factory and should not require adjustment unless the coil has been replaced. Before adjusting, check to see that the coil end of the rod projects 2 inches above the tube shelf.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RCA VICTOR PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA VICTOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	10	70	73964	E26F2		BBR10-90		TVA-1406	RF Bypass
C2	.05	200	73553	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	56		75784	SI56	D6-560	5W5Q5	GP1K-56	19C28	Osc. Grid Cap
C4	10000		73960	BPD-01	DD-103		821-01	36C1	Osc. Decoupling
C5	.003	200	73961	P285-003	D6-302	PTE6D3	GP2M-003	68P3	IF Grid Filter
C6	4		73153				NPOK-4		Fixed Trimmer
C7	56		75784	SI56	D6-560	5W5Q5	GP1K-56	19C28	Diode RF Filter
C8	82		75785	SI82	D6-100	5W5T1	GP1K-82	19C11	Diode RF Filter
C9	.002	200	72315	P285-002	D6-202	PTE6D2	801-002	68P27	Audio Coupling
C10	.02	200	71928	P285-02				68P15	AF Amp. Screen
C11	82		75785	SI82	D6-101	5W5T1	GP1K-82	19C11	AF Amp. Plate
C12	.001	200	72792	P285-001	D6-102	PTE6D1	GP2L-001	68P26	Audio Coupling
C13	.002	200	72312	P285-002	D6-202	PTE6D2	801-002	68P27	Output Plate

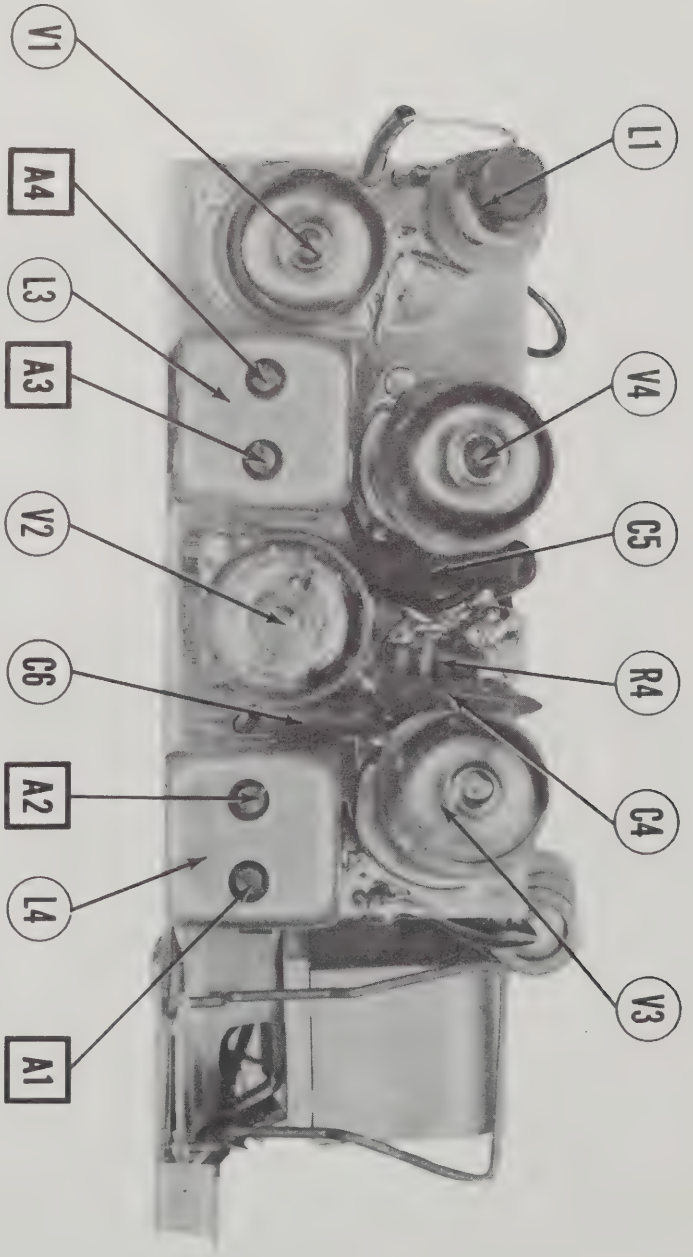
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1	2Meg	½	75773				Volume Control And SW

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA VICTOR PART No.	IRC PART No.	
R2	100KΩ	½			Osc. Grid
R3	15KΩ	½			Osc. Anode Decoupling
R4	4.7Meg	½			IF Amp. Grid
R5	3.3Meg	½		BTS-3.3Meg	AVC Network
R6	47KΩ	½		BTS-47K	Diode Filter
R7	1000Ω	½		BTS-1000	Tone Compensation
R8	10Meg	½		BTS-10Meg	AF Amp. Grid
R9	1Meg	½		BTS-1Meg	AF Amp. Plate
R10	4.7Meg	½		BTS-4.7Meg	AF Amp. Screen
R11	3.3Meg	½		BTS-3.3Meg	Output Grid
R12	390Ω	½		BTS-390	Isolation

CHASSIS—TOP VIEW



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PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA VICTOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	14KΩ	19.5Ω	350Ω	.9Ω	75777				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA VICTOR PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD RES.	V. C. IMP.				
8PL	PM	19.5Ω	70428			
	CONE DIA.	V. C. DIA.				
SP2	1 3/4"X 2 1/4"	7/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RCA VICTOR PART No.	MEISSNER PART No.	
L1	Loop Ant.	3.2Ω		75778		
L2	Osc. Coil	1.2Ω	6.5Ω	75774		
L3	1st IF	25Ω	25Ω	75775		
L4	2nd IF	25Ω	25Ω	75776		

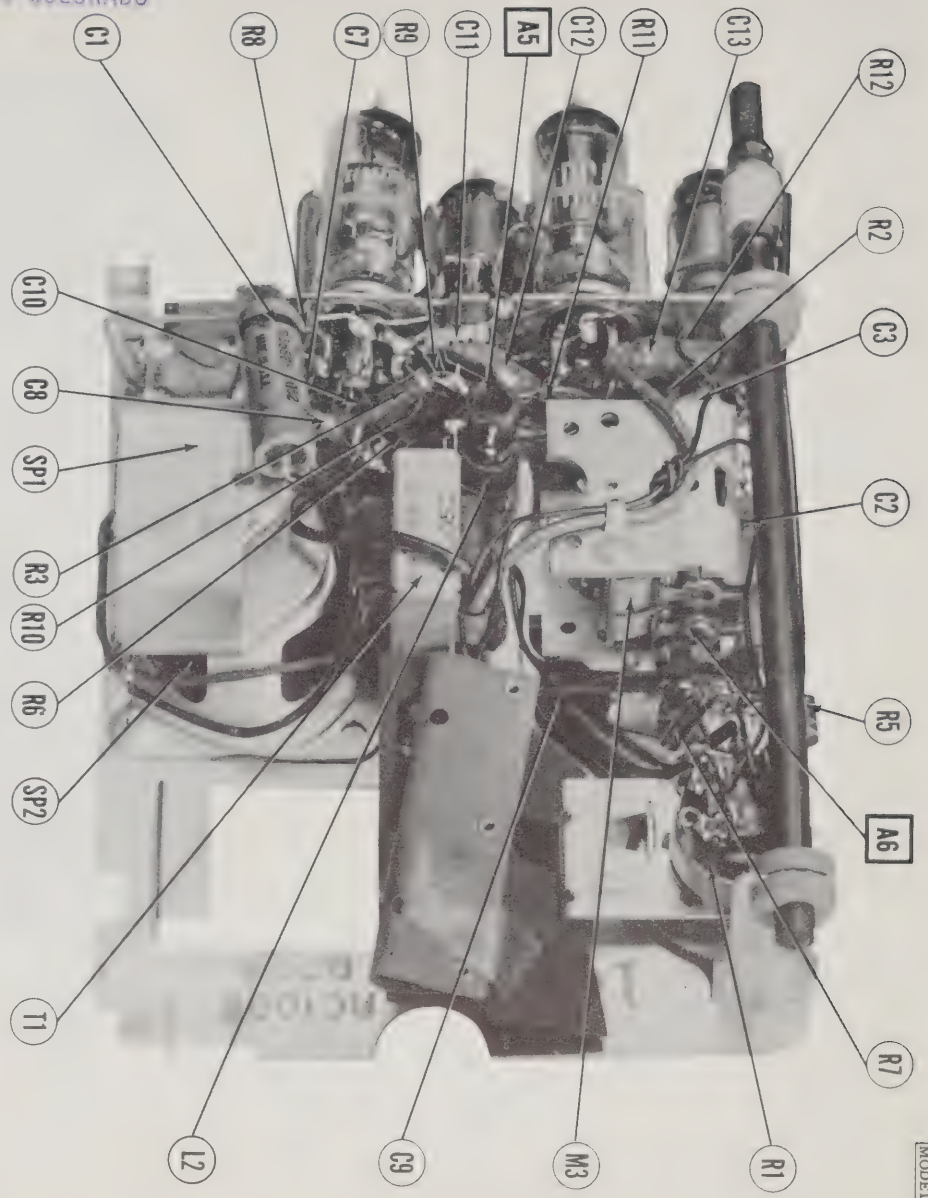
BATTERIES

ITEM No.	VOLTAGE	RCA VICTOR PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1.5V "A"	VS036 or VS001	950			2R			
M2	67.5V "B"	VS016		467			XX45		

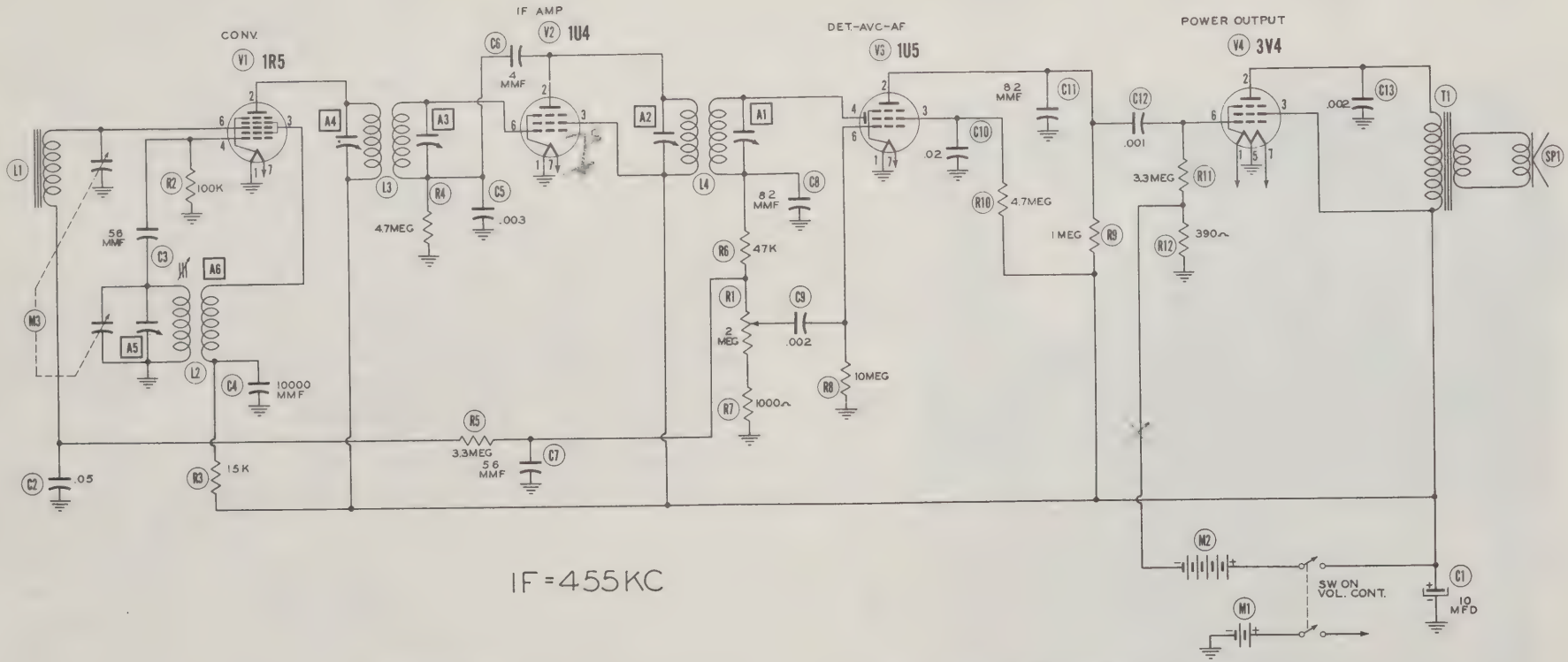
MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M3	2 Gang Var. Cap	75783	(8-191MMF, 11-109MMF)
	Knob	75779	Volume
	Cabinet	75647	
	Dial Knob	75788	

CHASSIS—BOTTOM VIEW



RCA VICTOR MODEL B-411



IF = 455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V	67VDC	38VDC	8-7.5VDC	0V	-.2VDC	1.5VDC
V 2	1U4	0V	67VDC	67.5VDC	67.5VDC	0V	-.1VDC	1.5VDC
V 3	1U5	0V	8.2VDC	3.8VDC	-.4VDC	-.4VDC	-.2VDC	1.5VDC
V 4	3V4	1.5VDC	6.5VDC	67.5VDC	-3.6VDC	0V	-.3VDC	1.5VDC

$ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†25Ω	†15KΩ	100KΩ	*	5.3Meg	*
V 2	1U4	*	†25Ω	†0Ω	†0Ω	*	4.7Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	2Meg	2Meg	10Meg	*
V 4	3V4	*	†350Ω	†0Ω	390Ω	*	3.3Meg	*

† MEASURED FROM POSITIVE B BATTERY TERMINAL (POWER SWITCH ON)
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

3V4 - 90† - 4.5

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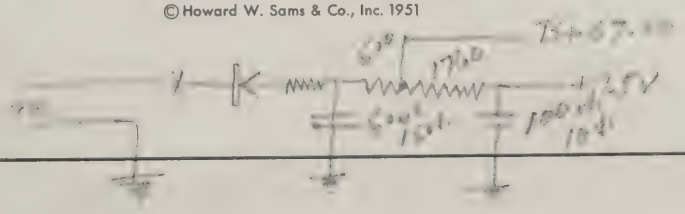

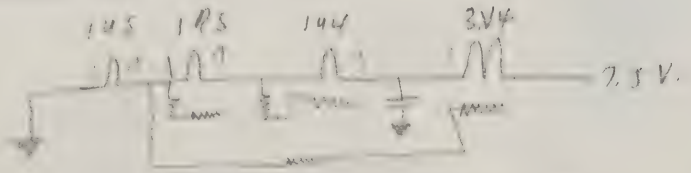

132-12

1 - DC Voltage measurements are at 20, 000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

STEWART-WARNER
MODELS 9200-A, -C, -D, -FA, -G

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MODEL 9200-A

STEWART-WARNER
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DATE 5-51 SET 132 FOLDER 13

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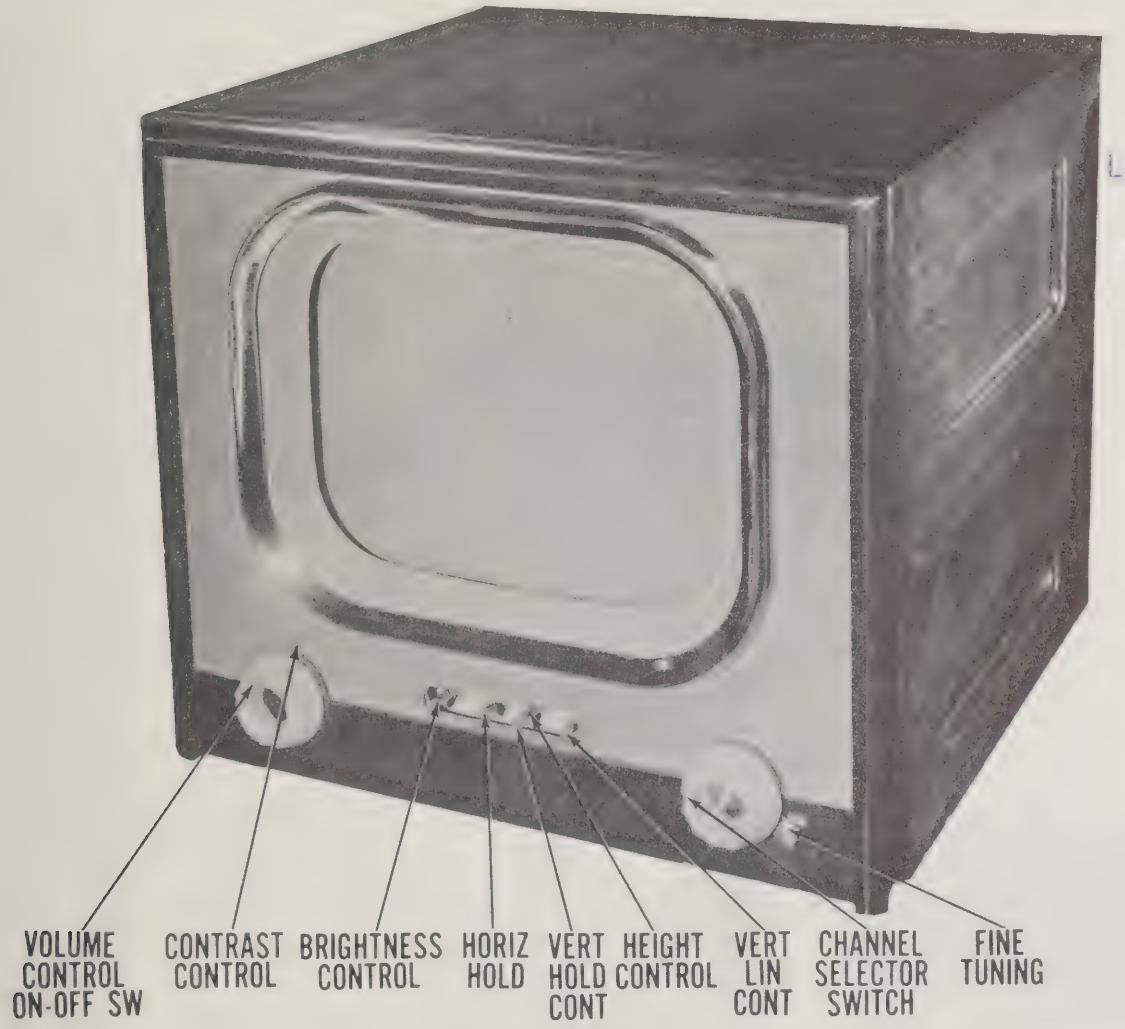

STEWART-WARNER
MODELS 9200-A, -C, -D, -FA,-G

STEWART - WARNER MODEL 9200-A

TRADE NAME	Stewart - Warner, Models 9200-A, -C, -D, -FA, -G
MANUFACTURER	Stewart - Warner Corp., 1826 Diversey Pkwy., Chicago (14), Illinois
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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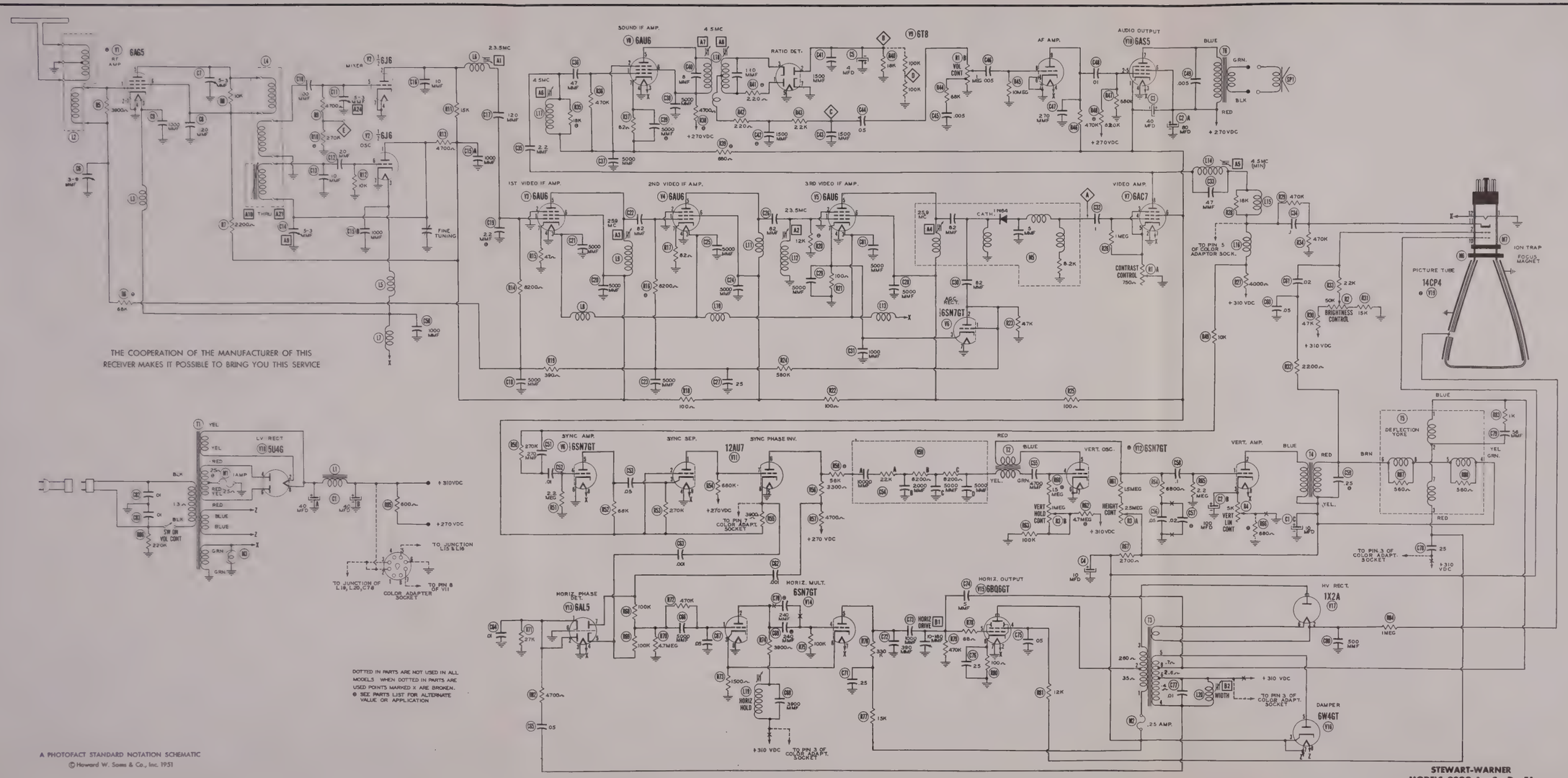
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STEWART-WARNER
MODELS 9200-A, -C, -D, -FA

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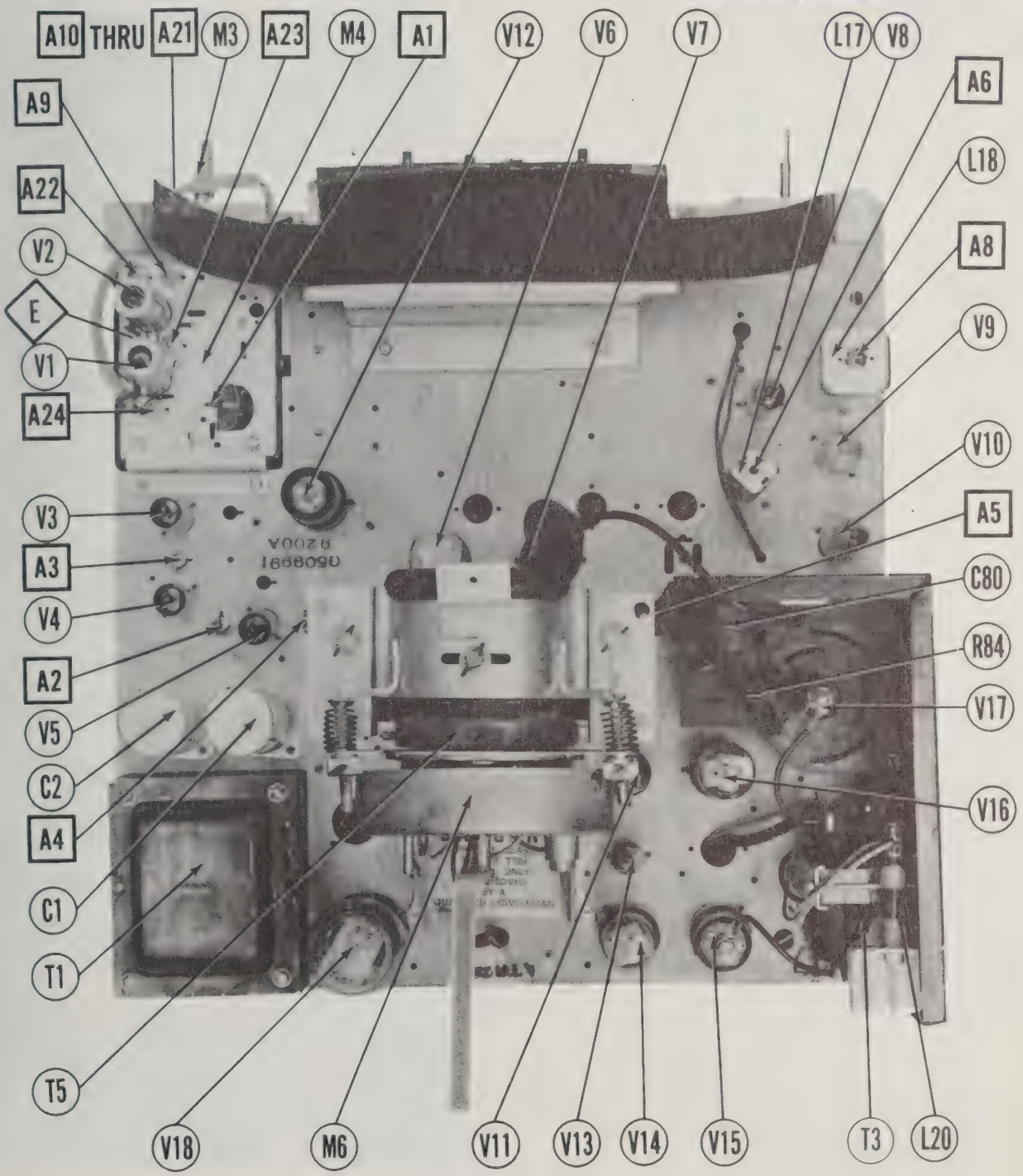

CHASSIS TOP VIEW

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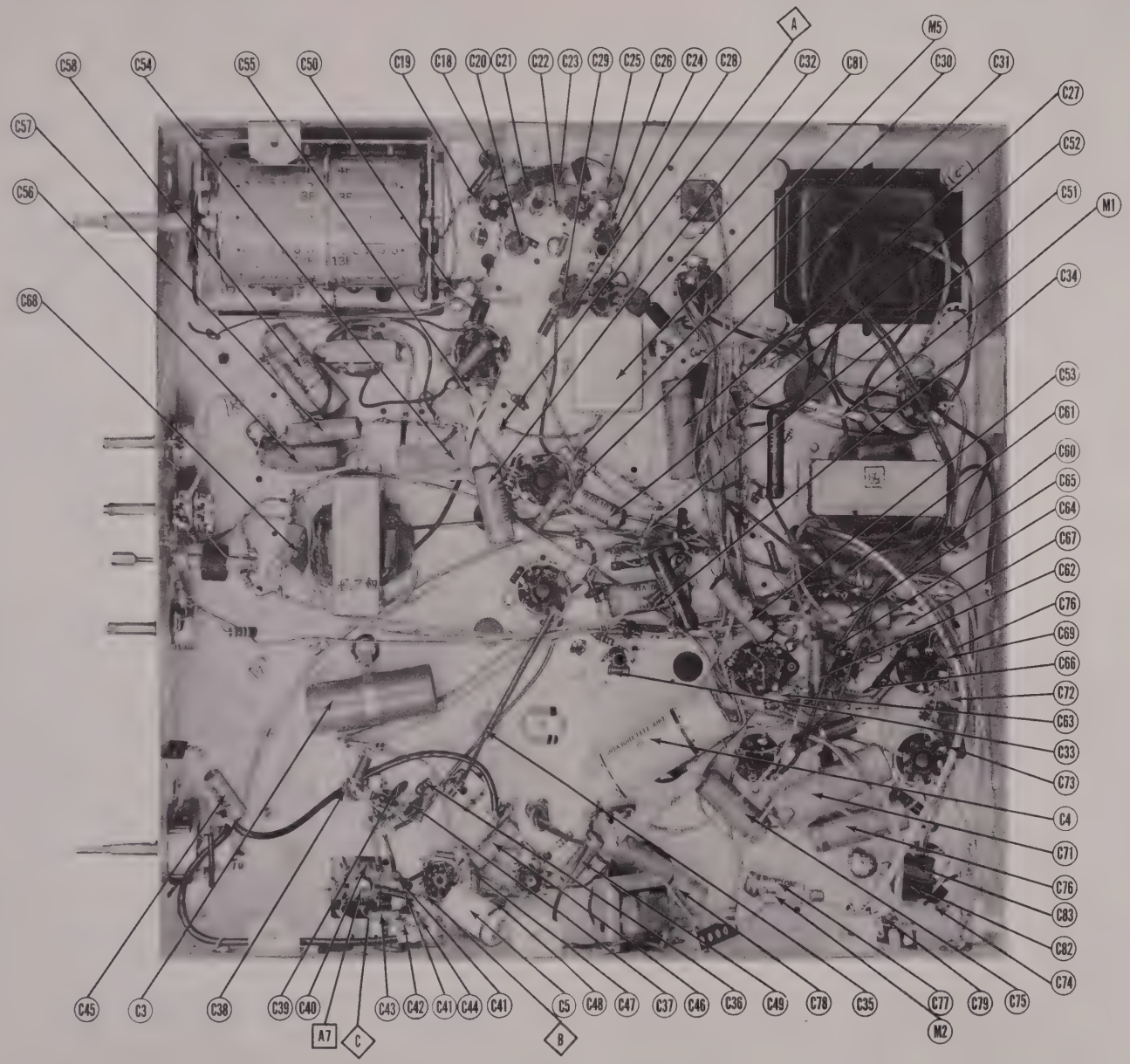

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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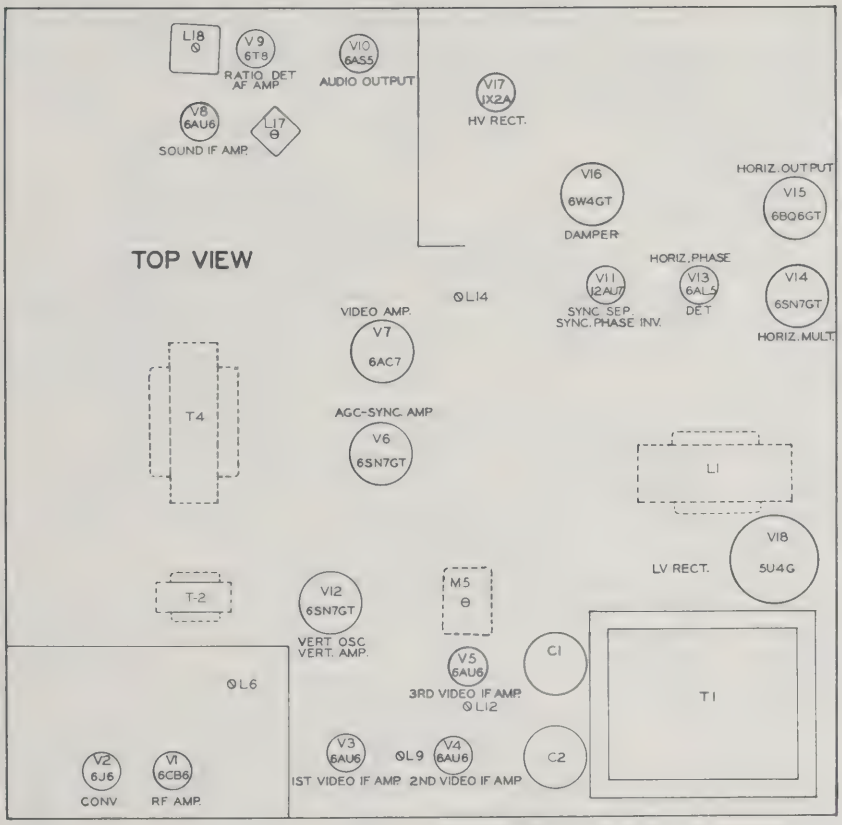
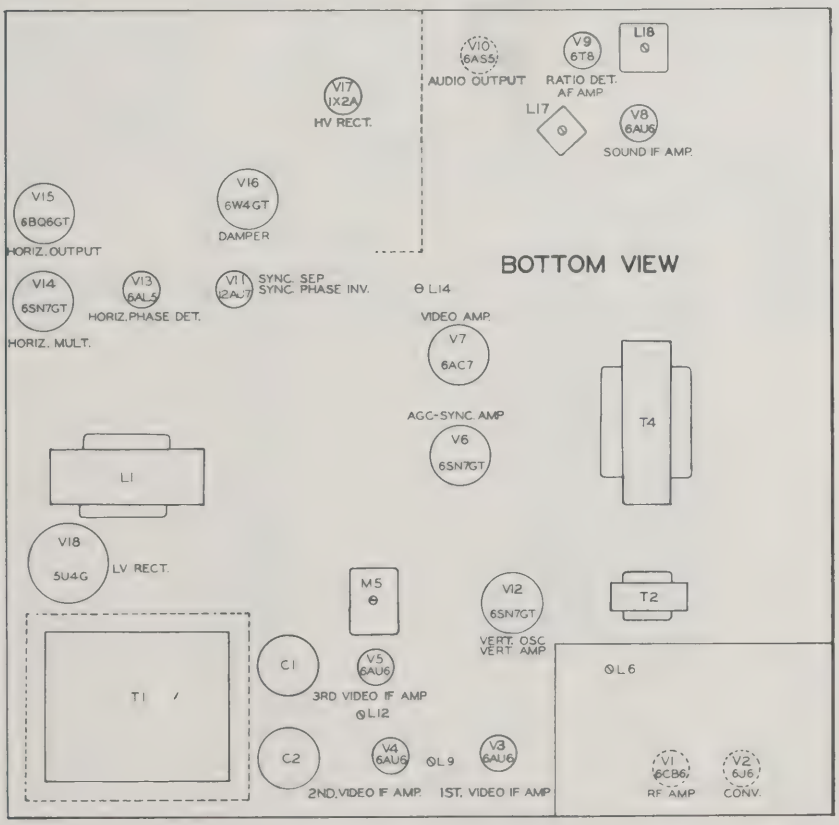




TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2) and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the junction of R24 and C27, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	23.5MC (Unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	25.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	25MC (10MC SWP)	22.25MC 26.75MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 and A2 to properly place the 22.25MC marker, and A3 and A4 to properly place the 26.75MC marker.

4.5MC TRAP ADJUSTMENT

Remove the third video amp. tube, (V5), from its socket during this adjustment only.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to Point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (figure 2), to Pin 11 of picture tube. Common to chassis.	A5	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to Point A. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to Point (B). Common to chassis.	A6, A7, A8	Adjust for maximum deflection. A8 will show broad peak.
6.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to Point A. Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C5. Adjust for maximum amplitude and symmetry as per figure 3.
6.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A8	Adjust A8 so 4.5MC occurs at center of crossover lines as per figure 4. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Set the overall oscillator adjustment screw, (A9) so the top of the screw is 3/8 inch above the chassis surface.
The sweep generator output lead should be terminated with its charateristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A10	Adjust to place the sound marker as shown in figure 5. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A11	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A12	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A13	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A14	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A15	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A16	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A17	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A18	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A19	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A20	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A21	

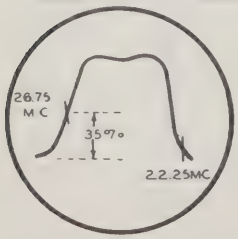


FIG. 1

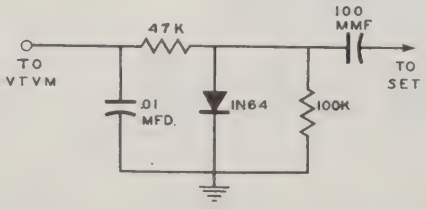


FIG. 2

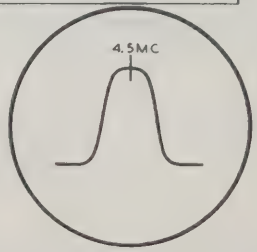


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Leave the 3 volt bias connected as during video IF alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to Point E. Low side to chassis.	A22, A23, A24	Adjust for response curve similar to figure 6 with markers above 90%.
9.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 6. If markers fall below 70% on any channel, make slight adjustments of A22 and A24 with channel switch set ofr that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

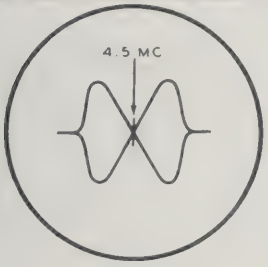


FIG. 4

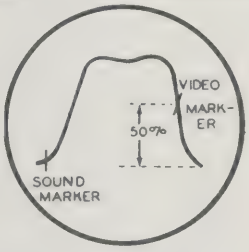


FIG. 5

FIG. 6

PROPERTY OF
L. F. BLANKENSHIP
[illegible] MAPLE ST.
DENVER, COLORADO

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.4VDC	0V	6.3VAC	0V	85VDC	85VDC	0V		
V 2	6J6	80VDC	75VDC	6.3VAC	0V	-.9VDC	§-2.4VDC	0V		
V 3	6AU6	-.2VDC	0V	6.3VAC	0V	115VDC	115VDC	.4VDC		
V 4	6AU6	-.2VDC	0V	6.3VAC	0V	120VDC	120VDC	.8VDC		
V 5	6AU6	0V	0V	6.3VAC	0V	125VDC	125VDC	1.2VDC		
V 6	6SN7GT	0V	0V	1.2VDC	-.6VDC	35VDC	0V	0V	6.3VAC	
V 7	6AC7	0V	0V	18VDC	.6VDC	18VDC	130VDC	6.3VAC	225VDC	
V 8	6AU6	#1VDC	#6.6VDC	6.3VAC	0V	#100VDC	#100VDC	#7.5VDC		
V 9	6T8	-.2VDC	-.4VDC	-.2VDC	6.3VAC	0V	0V	0V	-.4VDC	50VDC
V 10	6AS5	#0V	#-8.5VDC	6.3VAC	0V	#-8.5VDC	#140VDC	#125VDC		
V 11	12AU7	#25VDC	#0V	#3.7VDC	0V	0V	#90VDC	#25VDC	#27VDC	6.3VAC
V 12	6SN7GT	-3.8VDC 0V	500VDC 380VDC	25VDC 0V	-12VDC -2.4VDC	200VDC 30VDC	0V	0V	6.3VAC	
V 13	6AL5	0V	0V	0V	6.3VAC	6VDC	0V	-5VDC		
V 14	6SN7GT	.3VDC	280VDC	13VDC	-5VDC	115VDC	13VDC	6.3VAC	0V	
V 15	6BQ6GT	0V	6.3VAC	0V	135VDC	-20VDC	-20VDC	0V	8.4VDC	TOP CAP *
V 16	6W4GT	0V	0V	510VDC	0V	305VDC	510VDC	510VDC	510VDC	
V 17	1X2A	* DO NOT MEASURE								
V 18	5U4G	510VDC	320VDC	0V	310VAC	6.3VAC	310VAC	0V	320VDC	
V 19	14CP4	0V	40VDC 170VDC	PIN 10 510VDC	PIN 11 105VDC	PIN 12 6.3VAC				

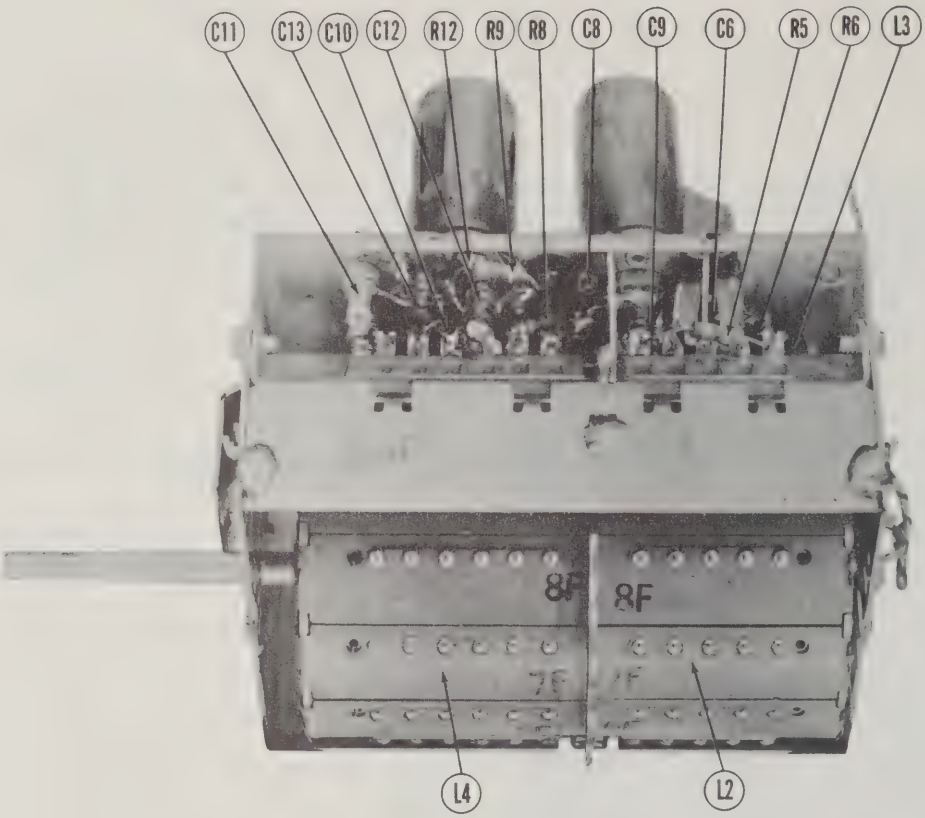
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
§ TAKEN WITH VACUUM TUBE VOLTMETER
# MEASURED FROM PIN 1 OF V10
* DO NOT MEASURE

RESISTANCE READINGS

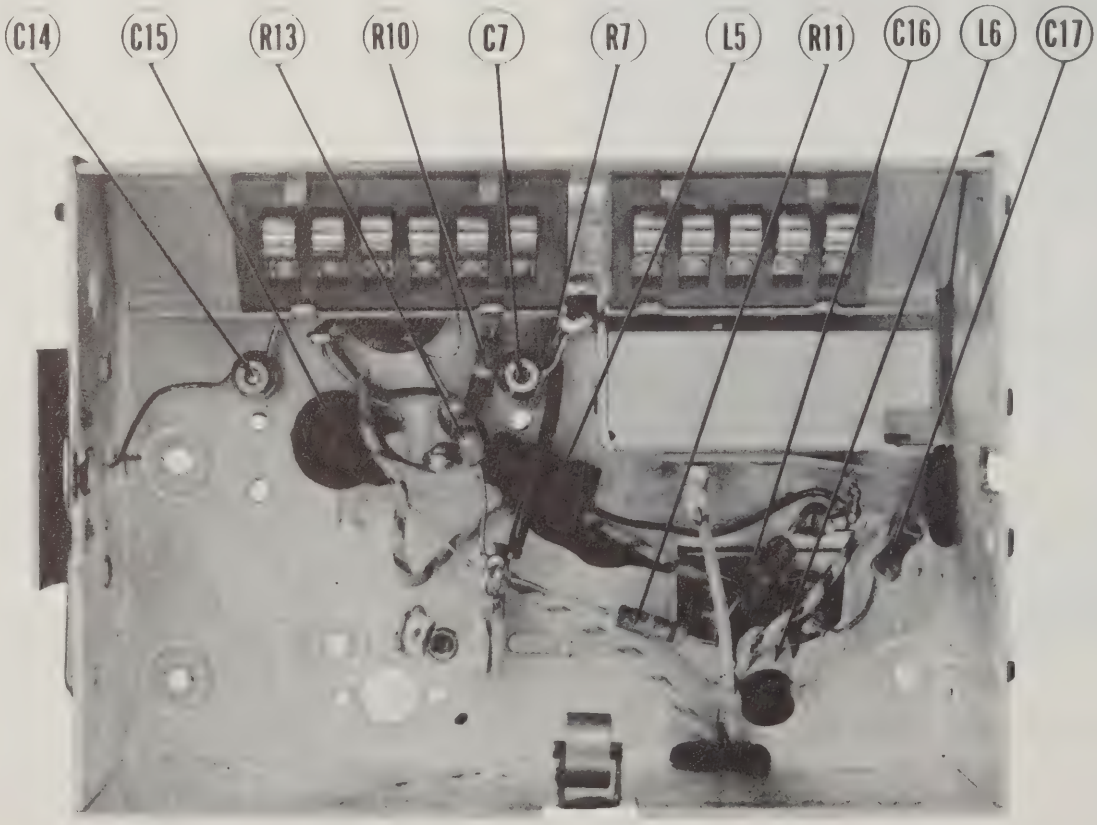
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	675KΩ	0Ω	.1Ω	0Ω	#2.5KΩ	#2.5KΩ	0Ω		
V 2	6J6	#5KΩ	#15KΩ	.1Ω	0Ω	275KΩ	10KΩ	0Ω		
V 3	6AU6	615KΩ	0Ω	.1Ω	0Ω	#300Ω	#300Ω	47Ω		
V 4	6AU6	615KΩ	0Ω	.1Ω	0Ω	#200Ω	#200Ω	82Ω		
V 5	6AU6	.2Ω	0Ω	.1Ω	0Ω	#100Ω	#100Ω	100Ω		
V 6	6SN7GT	47KΩ	47KΩ	100Ω	2.2Meg	#68KΩ	0Ω	0Ω	.1Ω	
V 7	6AC7	0Ω	0Ω	750Ω	1Meg	750Ω	#0Ω	.1Ω	†4KΩ	
V 8	6AU6	#470KΩ	#680Ω	.1Ω	0Ω	†5.4KΩ	†5.4KΩ	#760Ω		
V 9	6T8	Inf.	18KΩ	Inf.	.1Ω	0Ω	0Ω	0Ω	10Meg	#470KΩ
V 10	6AS5	90KΩ	440KΩ	.1Ω	0Ω	440KΩ	†670Ω	†1.1KΩ		
V 11	12AU7	†680KΩ	#0Ω	#270KΩ	0Ω	0Ω	†8.7KΩ	†680KΩ	#3.9KΩ	.1Ω
V 12	6SN7GT	2.2Meg	▲3.5KΩ	5KΩ 0Ω	1.6Meg 2.6Meg	▲1.5Meg ▲4Meg	0Ω	0Ω	.1Ω	
V 13	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 14	6SN7GT	5.2Meg	†3.9KΩ	1.5KΩ	100KΩ	▲345KΩ	1.5KΩ	.1Ω	0Ω	
V 15	6BQ6GT	Inf.	.1Ω	Inf.	†12KΩ	470KΩ	470KΩ	0Ω	100Ω	TOP CAP ▲35Ω
V 16	6W4GT	Inf.	Inf.	300KΩ	Inf.	†75Ω	▲ 0Ω	▲ 0Ω	▲.2Ω	
V 17	1X2A	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲295Ω
V 18	5U4G	▲0Ω	70KΩ	Inf.	25Ω	.1Ω	25Ω	0Ω	70KΩ	
V 19	14CP4	0Ω	35KΩ 60KΩ	PIN 10 ▲ 0Ω	PIN 11 240KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
MEASURED FROM PIN 1 OF V10
† MEASURED FROM PIN 8 OF V18
▲ MEASURED FROM PIN 3 OF V16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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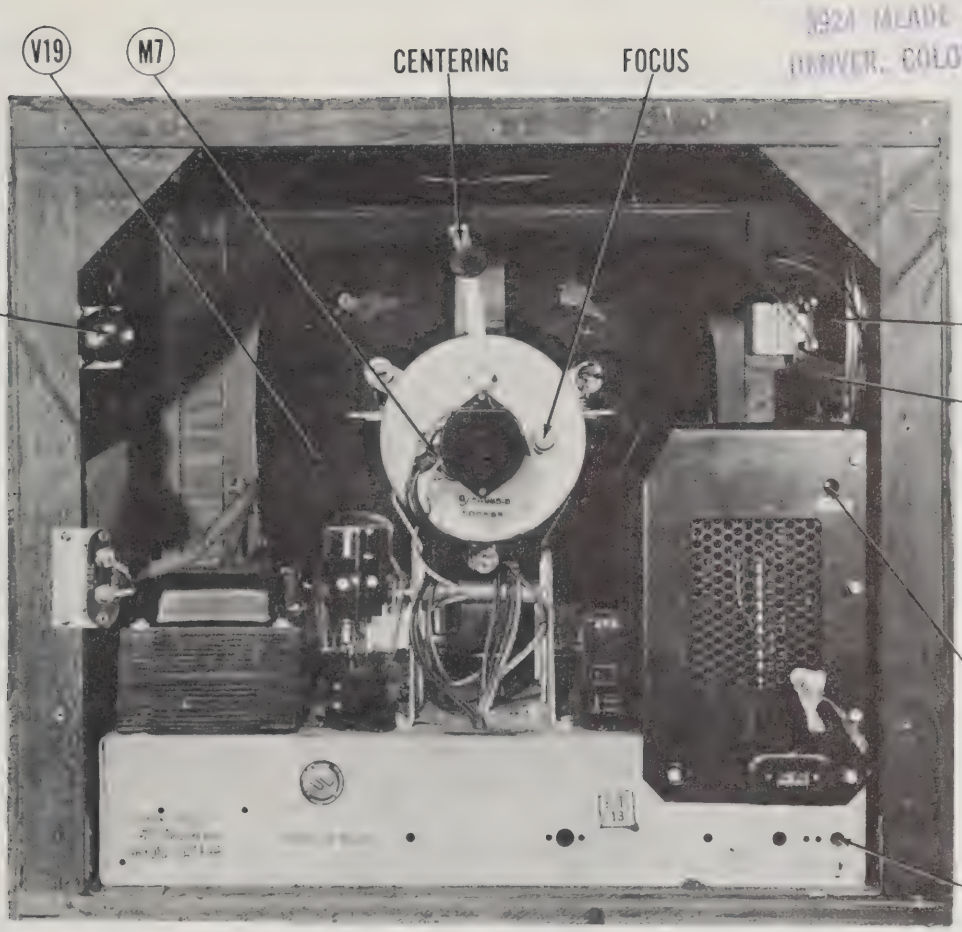
3924 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold control until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B1), counter-clockwise until vertical white or black lines appear in the left side of the picture. Then, turn B1 clockwise just enough to remove the lines.

Adjust the width slug, (B2), until the picture fills the mask horizontally.

Since the picture width and linearity is effected by B1, it may be necessary to adjust it in conjunction with B2 to obtain proper width with best horizontal linearity.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove seven wood screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove hex head bolts from chassis. Remove chassis.
7. Remove four hex nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stewart Warner PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	6CK	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp	6AU6	6AU6	7BK	
V6	AGC-Sync. Amp.	6SN7GT	6SN7GT	8BD	
V7	Video Amplifier	6AG7	6AG7	8N	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V10	Audio Output	6AS5	6AS5	7CV	
V11	Sync. Separator-Sync. Phase Inv.	12AU7	12AU7	9A	
V12A	Vert. Oscillator-Vert. Amplifier	6SN7GT	6SN7GT	8BD	
B	Vert. Oscillator-Vert. Amplifier	6BL7GT	6BL7GT		
V13	Horiz. Phase Det.	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	8AM	
V16	Damper	6W4GT	6W4GT	4CG	
V17A	HV Rectifier	1X2A	1X2A	7CB	
B	HV Rectifier	1X2	1X2	7CB	
V18	LV Rectifier	5U4G	5T	5U	
V19A	Picture Tube	14CP4	14CP4	12D	
B	Picture Tube	14BP4	14BP4	12D	Model 9200-A
C	Picture Tube	16RP4	16RP4	12D	
D	Picture Tube	16TP4	16TP4	12D	Model 9200-C, D, FA, G

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stewart Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AFH882J		UPT44145		TVL-3785	▲ Filter
B	40	450							■ Filter
C	10	450							▲ Decoupling
C2A	80	250	D9002	AFI618G		UPT100-25V15		TVL-3684	● Filter
B	100	50			TCN-100	N750L-100			▲ Vert. Output Cathode
C3	40	300		PRS450/40		829-3		TVA-1611	Filter
C4	10	600		PRS700/10		BR4035A		TVA-1902	Decoupling
C5	4	150	502547	PRS150/4		BRHV610		TVA-1902	Stabilizing Cap.
C6	3-9					BR445		TVA-1402	Variable Trimmer
C7	5-3				829-3				Variable Trimmer
C8	120			SI120	D6-121		GP2K-120	19C29	RF Amp. Dec.
C9	1000				DD-102		801-001	19C1	RF Amp. Fil.
C10	100	50		SI100N750	TCN-100		N750L-100		RF Coupling
C11	5-3				829-3				Variable Trimmer
C12	20			SI20NP0	TCZ-20		NP0K-20		Osc. Grid Cap.
C13	10			SI10N750	TCN-10		N750K-10	19C4	Fixed Trimmer
C14	5-3				829-3				Variable Trimmer
C15A	1000		508576	BPD-2X001	DD-2-102		B12-2X001	29C7	RF Bypass
B	1000								Conv. Fil. Bypass
C16	10		513444	SI10NP0	TCZ-10		NP0K-10	19C3	Fixed Trimmer
C17	120		512542	SI120	D6-121		GP2K-120	19C29	IF Coupling
C18	5000		513013	BPD-005	DD-502	1D5D5	81L-005	29C1	AGC Filter
C19	2.2		513001		TCZ-2.2				Fixed Trimmer ●
C20	5000		513013	BPD-005	DD-502	1D5D5	81L-005	29C1	1st. V. IF Dec.
C21	5000		513013		DD-502	1D5D5	81L-005	29C1	1st. V. IF Fil.
C22	82			SI82	TCN-82	5W5T1	GP1K-82	19C11	IF Coupling
C23	5000			BPD-005	DD-502	1D5D5	81L-005	29C1	AGC Filter
C24	5000			BPD-005	DD-502	1D5D5	81L-005	29C1	2nd. V. IF Dec.
C25	5000			BPD-005	DD-502	1D5D5	81L-005	29C1	2nd. V. IF Fil.
C26	82		513016	SI82	TCN-82	5W5T1	GP1K-82	19C11	IF Coupling
C27	.25	200	512045	P488-25		GT2P25		2TM-P25	AGC Filter
C28	5000			BPD-005	DD-502	1D5D5	81L-005	29C1	3rd. V. IF Dec.
C29	5000		513013	BPD-005	DD-502	1D5D5	81L-005	29C1	3rd. V. IF Cathode
C30	82		513016	SI82	TCN-82	5W5T1	GP1K-82	19C11	IF Coupling
C31	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	DAGC Decoupling
C32	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C33	47		513438	SI47NP0	TCZ-47		GP1K-47	19C25	Fixed Trimmer
C34	.1	600	512035	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C35	8.2		513001		TCZ-2.2				S. IF Coupling
C36	47			SI47	D6-470	5W5Q5	GP1K-47	19C25	S. IF Coupling
C37	5000		513013	BPD-005	DD-502	1D5D5	81L-005	29C1	S. IF Dec.
C38	5000		513013	BPD-005	DD-502	1D5D5	81L-005	29C1	S. IF Dec.
C39	5000			BPD-005	DD-502	1D5D5	81L-005	29C1	S. IF Cathode ●
C40	8		513443	SI8.2NP0			NP0K-8.2		Fixed Trimmer
C41	1500		513010	SI1500	D6-152	1W5D15	GP2L-0015	29C8	RF Bypass
C42	1500		513010	SI1500	D6-152	1W5D15	GP2L-0015	29C8	Diode Load Cap. †
C43	1500		513010	SI1500	D6-152	1W5D15	GP2L-0015	29C8	De-emphasis
C44	.05	200	512027	P488-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C45	.005	600	512007	P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Tone Comp.
C46	.005	600	512007	P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Audio Coupling
C47	270			SI270	D6-271	5W5T25	GP2K-270	19C31	AF Amp. Plate
C48	.01	400		P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C49	.005	600	512007	P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Output Plate
C50	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	Filament Bypass
C51	270			SI270	D6-271	5W5T25	GP2K-270	19C31	Sync. Coupling
C52	.01	600	512013	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Sync. Coupling
C53	.05	400	512029	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling
C54A	10000		† 508062	P688-01	D6-103	PTE6S1	821-01	6TM-S1	Vert. Sync. Coupling
B	2000			P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Integrator Net.
C	5000			P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Integrator Net.
D	50000			P688-005	D6-502	PTE6D5	81L-005	6TM-D5	Integrator Net.
C55	4700	1000	512533	P1088-0047		PTE16D5		MB-D47	Vert. Osc. Grid
C56	.05	600	512308	P688-05		PTE6S5		6TM-S5	Vert. Discharge
C57	.02	600		P688-02		PTE6S2		6TM-S2	Vert. Discharge ●
C58	.1	600	512037	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C59	.25	600	512045	684-25		GT6P25		6TM-P25	Fixed Trimmer ●

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C60	.05	400	512031	P488-05	DF-503	PTE4S5		4TM-S5	Integrator Net
C61	.02	600	512019	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Sweep Coupling
C62	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sync. Coupling
C63	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sync. Coupling
C64	.01	200	512009	P488-01	D6-103	PTE4S1	821-01	4TM-S1	AFC Filter
C65	.05	600	512031	P488-05	DF-503	PTE6S5		6TM-S5	Hor. Feedback
C66	5000		513013	BPD-005	DD-502	1D5D5	81L-005	29C1	AFC Filter
C67	.05	200	512027	P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C68	3900	500	512540	1464-004		1DR5D4		2TM-S5	AFC Filter
C69	240	500		1469-00025	D6-251	5R5T25	GP2K-250	MS-325	Fixed Trimmer
C70	240	500		1469-00025	D6-251	5R5T25	GP2K-250	MS-325	Hor. MV Feedback §
							GP2K-250	MS-325	Hor. MV Feedback §
C71	.25	600	512049	684-25		GT6P25		6TM-P25	
C72	390	500	512535	1469-0004	D6-391	5R5T4	GP2K-390	MS-34	Hor. MV Dec.
C73	1000	500	512515	1487-001	D6-102	1W5D1	GP2L-001	1FM-21	Hor. Discharge
C74	5		513026	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	Hor. Sweep Coupling
C75	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Hor. Feedback
C76	.25	200	512045	P488-25		GT2P25		2TM-P25	Hor. Output Screen
C77	.01	600	512013	P688-01	D6-103	PTE6S1		6TM-S1	Hor. Output Cathode
C78	.25	200	512045	P488-25		GT2P25		2TM-P25	Fixed Trimmer
C79	56		513015	SI56	D6-560		GP1K-56		Hor. Sweep Coupling
C80	500	20000	508686	HV500B	TV2-502				Hor. Shaping
C81	5000		513013	BPD-005	DD-502	1D5D5	81L-005	29C1	H. V. Filter
C82	.01	400	512255	P488-01	D6-103	PTE4S1	821-01	4TM-S1	3rd. V. IF Fil.
C83	.01	400	512255	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Line Filter

* Not used in all models.
† Some models use 220MMF in this application
‡ Items C54A, C54B, C54C, C54D, R59A, R59B, and R59C are combined into one unit.
§ Some models use 330MMF and some use 470MMF in applications of C69 and C70 inclusive.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart War. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750	2	509314				Contrast Control - Wire Wound - Front
B	1Meg	½					Volume Control and SW - Tapped ⓐ 250KΩ - Rear
R2A	50KΩ	½	508889	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not Req	Not Req	RS-2	AK-4	Attach to R2A per instructions
R3A	2.5Meg	½	508893				Height Control - Front
B	1Meg	½					Vert. Hold Control - Rear
R4A	5000Ω	½	508891	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req	Not Req	RS-2	AK-4	Attach to R4A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart Warner PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R5	3900Ω	½	510147	BTS-3900	Antenna Coil Shunt
R6	68KΩ 20%	½		BTS-68K	AGC Network - See Note 1
R7	2200Ω 20%	½	510143	BTS-2200	RF Amp. Decoupling
R8	10KΩ 20%	½	510155	BTS-10K	RF Coil Shunt
R9	4700Ω 20%	½	510149	BTS-4700	Mixer Grid
R10	470KΩ	½		BTS-270K	Mixer Grid - See Note 2
R11	15KΩ	½	510158		Mixer Plate
R12	10KΩ	½	510155	BTS-10K	Osc. Grid
R13	4700Ω	½	510149	BTS-4700	Osc. Plate
R14	8200Ω	½	510758		1st. Video IF Amp. Grid
R15	47Ω	½	510112		1st. Video IF Amp. Cathode
R16	8200Ω	½	510756		2nd. Video IF Amp. Grid - See Note 5
R17	82Ω	½	510117	BTS-82	2nd. Video IF Amp. Cathode
R18	100Ω	½	510119	BTS-100	Decoupling
R19	390Ω 20%	½	510129	BTS-390	AGC Network
R20	12KΩ 5%	½	510732		3rd. Video IF Transformer Shunt - See Note 6
R21	100Ω	½	510119	BTS-100	2rd. Video IF Amp. Cathode
R22	100Ω	½	510119	BTS-100	Decoupling
R23	47KΩ	1	510166	BTA-47K	AGC Diode Load
R24	560KΩ	½	510186	BTS-560K	AGC Network
R25	100Ω	1	510119	BTA-100	Decoupling
R26	1Meg 20%	½	510181	BTS-1Meg	Video Amp. Grid
R27	4000Ω	5	510753	1 3/4A-4000	Video Amp. Plate - Wire Wound
R28	18KΩ 5%	½	510745	BTS-18K-5%	Video Peaking Coil Shunt
R29	470KΩ	½	510184	BTS-470K	Voltage Divider
R30	47KΩ	1	510166	BTA-47K	Voltage Divider
R31	15KΩ	½	510157	BTS-15K	Voltage Divider
R32	2200Ω	½	510142	BTS-2200	Vert. Retrace Blanking Network
R33	22KΩ	½	510160	BTS-22K	Picture Tube Grid
R34	470KΩ	½	510184	BTS-470K	Picture Tube Cathode
R35	18KΩ	½	510159	BTS-18K	Sound IF Transformer Shunt - See Note 4
R36	470KΩ	½	510184	BTS-470K	Sound IF Amp. Grid
R37	82Ω	½	510117	BTS-82	Sound IF Amp. Cathode
R38	4700Ω	1	510249	BTA-4700	Sound IF Amp. Decoupling - See Note 7
R39	680Ω	½	510134	BTS-680	Bias Network - See Note 4
R40	18KΩ	½	510159	BTS-18K	Ratio Det. Diode Load
R41	220Ω	½	510124	BTS-220	Balancing - See Note 4
R42	220Ω	½	510124	BTS-220	Balancing - See Note 4
R43	22KΩ	½	510160	BTS-22K	De-emphasis
R44	68KΩ	½	510169	BTS-68K	Tone Compensation
R45	10Meg	½	510197	BTS-10Meg	AF Amp. Grid
R46	470KΩ	½	510184	BTS-470K	AF Amp. Plate
R47	680KΩ 5%	½	510746	BTS-680K-5%	Output Grid
R48	820KΩ 5%	½	510747	BTS-820K-5%	Voltage Divider
R49	10KΩ	½	510154	BTS-10K	Isolation
R50	270KΩ	½	510180	BTS-270K	Isolation
R51	2.2Meg	½	510193	BTS-2.2Meg	Sync. Amp. Grid
R52	68KΩ	½	510169	BTS-68K	Sync. Amp. Plate
R53	270KΩ	½	510180	BTS-270K	Sync. Sep. Cathode
R54	680KΩ	½	510187	BTS-680K	Sync. Sep. Plate
R55	3900Ω 5%	½	510748	BTS-3900-5%	Sync. Phase Inv. Cathode
R56	3300Ω 5%	½	510749	BTS-3300-5%	Sync. Phase Inv. Plate
R57	4700Ω 5%	½	510750	BTS-4700-5%	Sync. Phase Inv. Plate
R58	56KΩ	½	510168	BTS-56K	Integrator - See Note 8

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART WARNER PART No.	IRC PART No.	IDENTIFICATION CODES
R59A	22KΩ	½	‡508062	BTS-22K	Integrator
B	8200Ω	½		BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R60	1.5Meg 5%	½	510721	BTS-1.5Meg-5%	Vert. Osc. Grid - See Note 3
R61	1.5Meg 5%	½	510721	BTS-1.5Meg-5%	Vert. Osc. Plate
R62	4.7Meg	½	510195	BTS-4.7Meg	Voltage Divider - See Note 9
R63	100KΩ	½	510172	BTS-100K	Voltage Divider
R64	6800Ω 5%	½	510755	BTS-6800-5%	Vert Peaking
R65	2.2Meg	½	510193	BTS-2.2Meg	Vert, Output Grid
R66	680Ω	½	510134	BTS-680	Vert. Output Cathode - See Note 4
R67	2700Ω	2	510344	BTB-2700	Decoupling
R68	100KΩ 5%	½	510751	BTS-100K-5%	Horiz. Phase Det. Diode Load
R69	100KΩ 5%	½	510751	BTS-100K-5%	Horiz. Phase Det. Diode Load
R70	4.7Meg 20%	½	510195	BTS-4.7Meg	Horiz. Phase Net Diode Load
R71	27KΩ	½	510162	BTS-27K	Horiz. Phase Det. Diode Load
R72	470KΩ	½	510184	BTS-470K	Horiz. AFC Filter
R73	1500Ω	½	510139	BTS-1500	Horiz. MV Cathode
R74	3900Ω	½	510147	BTS-3900	Horiz. MV Plate
R75	100KΩ 20%	½	510172	BTS-100K	Horiz. MV Grid
R76	330KΩ	½	510181	BTS-330K	Horiz. MV Plate
R77	15KΩ	2	510357	BTB-15K	Horiz. MV Decoupling
R78	1MΩ 20%	½	510116		Parasitic Suppressor
R79	470KΩ	½	510184	BTS-470K	Horiz. Output Grid
R80	100Ω	1	510108	BTA-100	Horiz. Output Cathode
R81	12KΩ	5	510758	1 3/4A-12K	Horiz. Output Screen - Wire Wound
R82	4700Ω	1	510248	BTA-4700	Horiz. Feedback Network
R83	1000Ω	½	510137	BTS-1000	Damping
R84	1Meg 20%	2	510391		HV Filter
R85	800Ω	10	510741	1 3/4A-800	Filter - Wire Wound
R86	220KΩ 20%	½	510179	BTS-220K	Isolation
R87	560Ω	½	510132	BTS-560	Damping
R88	560Ω	½	510132	BTS-560	Damping

‡ Items R59A, R59B, R59C, C54A, C54C, and C54D are combined into one unit
Note 1 Some models use 47KΩ Resistor in this application
Note 2 Some models use 220KΩ Resistor in this application
Note 3 Some models use 1.8Meg Resistor in this application
Note 4 Not used in all models
Note 5 Some models use 6800Ω Resistor in this application
Note 6 Some models use 18KΩ Resistor in this application
Note 7 Some models use 1000Ω Resistor in this application
Note 8 Some models use 22KΩ Resistor in this application
Note 9 Some models use 6.8Meg Resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Stewart Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⓐ 1.6A	640VCT .210ADC	5VAC ⓐ 3A	6.3VAC ⓐ 1.2A SEC. 4 6.3VAC ⓐ 7.4A	509380	P-8315 and P-6134 ②		

② Mount separately and use for SEC. #3

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Stewart Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	153Ω	940Ω	508076	A-8111 ①	A-3000 ①	TB0-1 ①	Vert. blocking osc.
T3	295Ω Tap 35.5Ω	3.7Ω Tap .4Ω and 3Ω SEC. 0Ω	509384				Horiz. output trans.
T4	800Ω Tap 8Ω		509375	A-8123 ①		TS0-5	Vert. output trans.
T5A	13Ω		508675	DY-7			Horiz Deflection Coil
B	49Ω						Vert. Deflection Coil

① Drill one new mounting hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Stewart Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	4.3KΩ	3Ω	450Ω	.9Ω	509376	A-3877		R0-8 ①	① Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: Stewart Warner PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	3Ω	509398 ①	ST-108	6A15	② Viking part no.
B	PM	3Ω	508157 ④	Mod. P6 - X	6A15	③ Used in models 9200-A
C	PM	3Ω	508174 ⑤	6J4 ③	69A2	④ Used in models 920D, 9200FA
	CONE DIA.	V. C. DIA.				⑤ Used in models 9200C
SP2A	5 7/8	9/16				
B	5 7/8	9/16				
C	6X9	I				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (D. CURRENT 1000 μA)	REPLACEMENT DATA: Stewart War. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.210 A	73Ω	2.9 Henries	508341	C- 2325	C-2991 ①	TR3300①	

① Drill one new mounting hole

STEWART-WARNER
MODELS 9200-A, -C, -D, -FA

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Stewart Warner PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω			Refer to Misc. for Part No.
L3	Fil. Choke	0Ω		507970		
L4	RF, Mixer Grid and Osc. Coils	0Ω				Refer to Misc. for Part No.
L5	Fil. Choke	0Ω		507971		
L6	1st. Video IF	.9Ω		509061		Slug Part No. 509062
L7	Fil. Choke	0Ω		507584		
L8	Fil. Choke	0Ω		507584		
L9	2nd. Video IF	.2Ω		507343		Less Slug Part No. 507357
L10	Fil. Choke	0Ω		507584		
L11	RF Choke	2.5Ω		507367		
L12	3rd. Video IF	.2Ω		507343		Less Slug Part No. 507357
L13	Fil. Choke	0Ω		507584		
L14	4.5MC Trap	1.8Ω		509603		(Slug Part No. 507357)
L15	Peaking	11Ω		509341		
L16	Peaking	15Ω		509343		
L17	Sound IF	1Ω		509378		
L18	Ratio Det. Trans.	6Ω	.2Ω	507321		
L19	Horiz. Hold Coil	85Ω		508967		Includes Slug Part No. 508963
L20	Width Coil	3Ω		509361		Includes Slug Part No. 507429

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			STEWART WARNER PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1Amp	509517 ⑦		518001		⑦ Used only in sets when letter "A" is included in series designation at rear of chassis.
M2	3AG	.250	508063		318.250		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Stewart Warner PART No.		
M3	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M4	RF Tuner	508890	Complete
M5	Video Det. Assembly Consists of:		
	Crystal	509386	1N-64
	4th. Video IF Coil	509613	Less Slug Part No. 507357
	RF Choke	507367	
	Peaking Coil	509340	Series Peaking
	Peaking Coil	509342	Parallel Peaking
	Resistor	510153	8.2KΩ
	Capacitor	513016	82MMF
	Capacitor	513432	5MMF
M6	Focus Magnet Assembly	509595	
M7	Ion Trap	508603	
	Antenna Coil	507952	Channel 2
		507953	Channel 3
		507954	Channel 4
		507955	Channel 5
		507956	Channel 6
		507957	Channel 7
		507958	Channel 8
		507959	Channel 9
		507960	Channel 10
		507961	Channel 11
		507962	Channel 12
		507963	Channel 13
	RF, Mixer Grid and Osc. Coils	507972	Channel 2
		507973	Channel 3
		507974	Channel 4
		507975	Channel 5
		507976	Channel 6
		507977	Channel 7
		507978	Channel 8
		507979	Channel 9
		507980	Channel 10
		507981	Channel 11
		507982	Channel 12
		507983	Channel 13
B1	Trimmer	508071	Horiz. Drive(10-160MMF)
	Safety Glass	509084	Model 9200-A
	Safety Glass	509481	Model 9200-C
	Safety Glass	509082	Model 9200-D
	Safety Glass	509407	Model 9200-FA
	Knob	509016	Channel Selector (Tan) Models 9200-A, 9200-C
	Knob	509410	Channel Selector (Brown) Models 9200-D, 9200-FA
	Knob	509017	Fine Tuning (Clear) Models 9200-A, 9200-C
	Knob	507917	Fine Tuning (Clear) Models 9200-D, 9200-FA
	Knob	509019	Contrast (Clear) Models 9200-A, 9200-C
	Knob	509087	Contrast (Clear) Models 9200-D, 9200-FA
	Knob	509018	Volume (Tan) Models 9200-A, 9200-C
	Knob	509409	Volume (Brown) Models 9200-D, 9200-FA
	Knob	502563	Built-in Antenna

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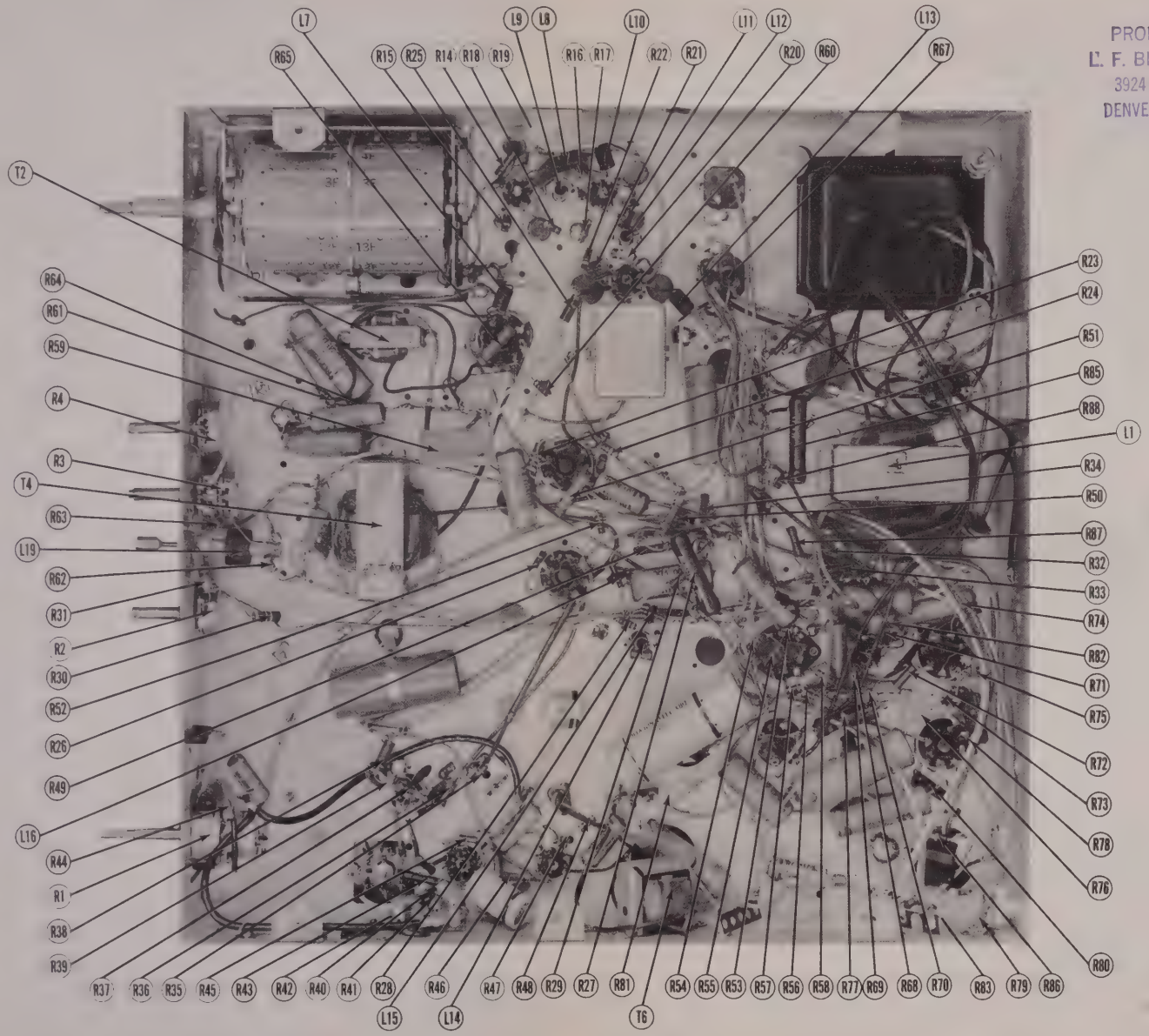
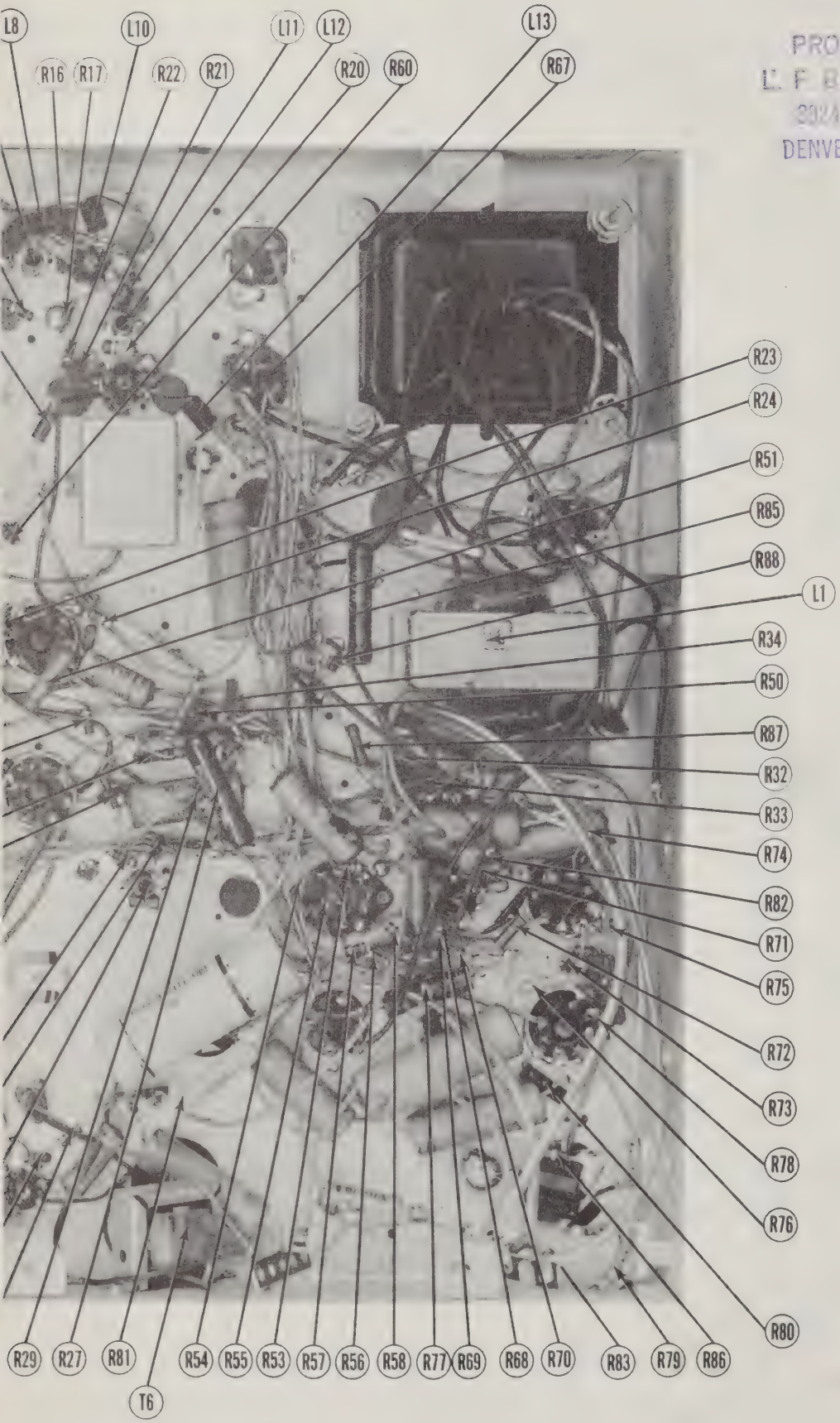


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



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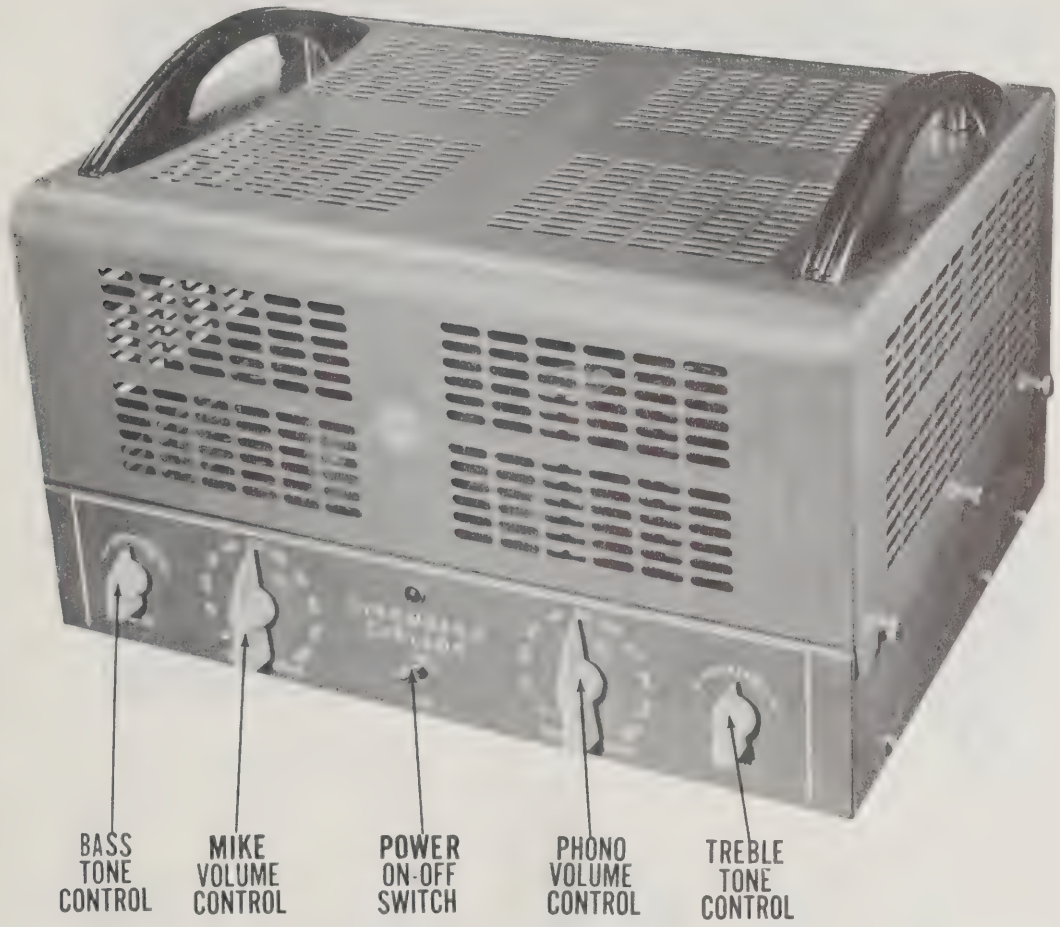
R AND INDUCTOR IDENTIFICATION

STROMBERG-CARLSON
MODEL AU-36



STROMBERG-CARLSON
MODEL AU-36

STROMBERG-CARLSON MODEL AU-36

TRADE NAME	Stromberg-Carlson, Model AU-36
MANUFACTURER	Stromberg-Carlson, Co., 100 Carlson Rd., Rochester, New York
TYPE SET	AC Operated Audio Amplifier
TUBES (NINE)	Types 6SJ7 Mic. Pre-Amp., 6SC7 1st AF-Phase Inverter, 6N7GT 2nd AF Amp., (4) 6L6G Power Output, (2) 5U4G Rectifier
POWER SUPPLY	105-125 Volts AC RATING 2.2 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STROM-CARL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Microphone Pre-Amplifier	35754	6SJ7	8N	
V2	1st AF Amplifier-Phase Inverter	35753	6SC7	8S	
V3	2nd AF Amplifier	41131	6N7GT	8B	
V4	Power Output	35756	6L6G	7AC	
V5	Power Output	35756	6L6G	7AC	
V6	Power Output	35756	6L6G	7AC	
V7	Power Output	35756	6L6G	7AC	
V8	Rectifier	35758	5U4G	5T	
V9	Rectifier	35758	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Stromberg-Carl PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	15	525	46164	*PRS450/30		UP2250		R1081	Filter
C2	15	525	34697	*PRS450/30		UP2250		R1081	Filter
C3A	30	450	34050	AF3662		UP3345		TVL-4769	▲ Filter
B	30	450				UP15D35			■ Filter
C	15	350							▲ Decoupling
C4	50	25	41157	PRS25/50		BR502A		TVA-1206	Mic Pre-Amp. Cathode
C5	50	25	41157	PRS25/50		BR502A		TVA-1206	1st AF Amp. Cathode
C6	25	50	46049	PRS50/25		BR255A		TVA-1306	Bias Filter
C7	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Mic Pre-Amp. Screen
C8	.05	400	40632	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C9	1000	500	29284	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Tone Comp.
C10	1000	500	29284	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Tone Comp.
C11	3.3		110431	SI3.3NP0	TCZ-3.3		NP0K-3.3		Neutralizing
C12	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C13	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C14	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C15	.1	400	25483	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C16	.022	1000	110570	P1088-022		PTE16S2		MB-S22	Fixed Trimmer

* Use two connected in series.

CONTROLS

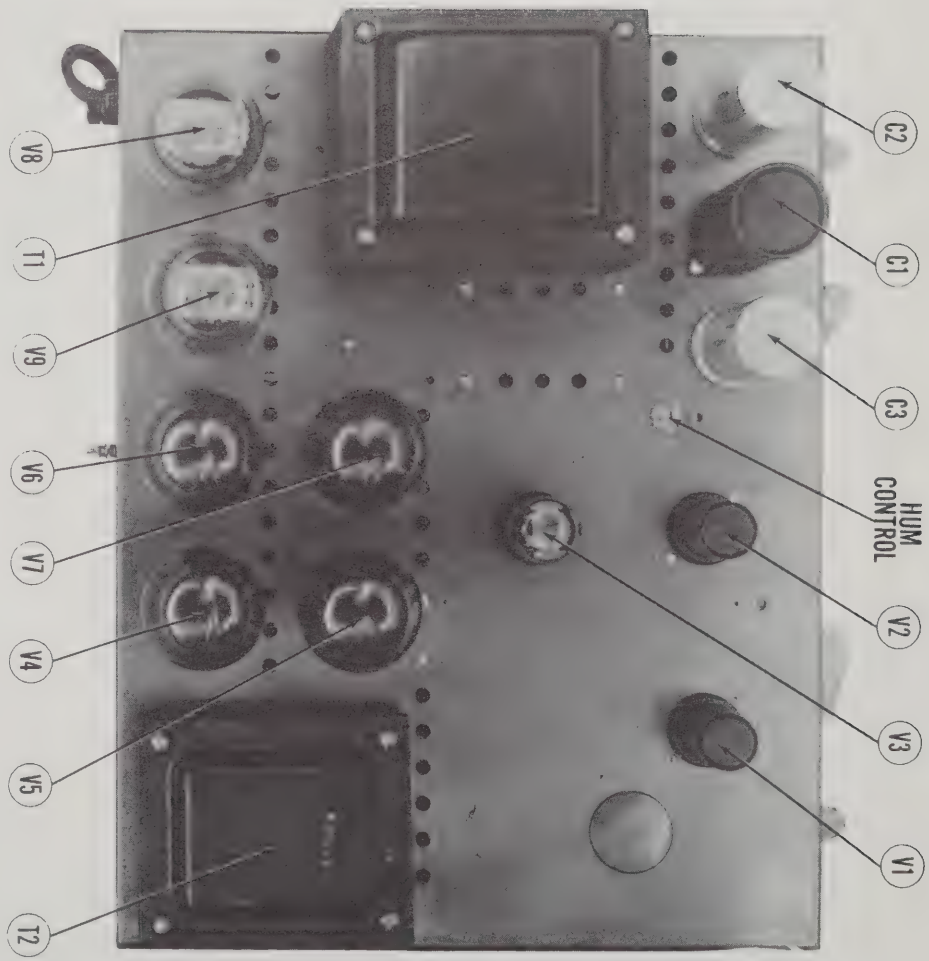
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: STROM-CAR PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5Meg	½	46464	Q11-141	AM-85-S	B-87	Bass Control
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R1A per instructions
R2A	1Meg	½	46463	Q13-137	AM-63-Z	B-70	Mike Volume Control
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R2A per instructions
R3A	1 Meg	½	46462	Q13-317	AM-63-Z	B-70	Treble Control
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R3A per instructions
R4A	1Meg	½	46463	Q13-317	AM-63-Z	B-70	Phono Volume Control
B	Shaft		Not Req	Not Req	FS-3	Not Req	Attach to R4A per instructions
R5	100Ω	1	46486	W-100 Ⓓ	43-100 Ⓓ	VK-121	Hum Control

Ⓓ Fashion Shaft to Duplicate Original

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: STROM-CARL PART No.	IRC PART No.	IDENTIFICATION CODES
R6	330KΩ	½	28185	BTS-330K	Series Phono
R7	470KΩ	½	28187	BTS-470K	Mike Pre-Amp. Isolation
R8	1Meg	½	28191	BTS-1Meg	Mike Pre-Amp. Grid
R9	1000Ω	½	28158	BTS-1000	Mike Pre-Amp. Cathode
R10	1Meg	½	28191	BTS-1Meg	Mike Pre-Amp. Screen
R11	100KΩ	½	28006	BTS-100K	Mike Pre-Amp. Plate
R12	220KΩ	½	28183	BTS-220K	1st AF Amp. Grid
R13	1000Ω	½	28158	BTS-1000	1st AF Amp. Cathode
R14	220KΩ	½	28183	BTS-220K	1st AF Amp. Plate
R15	220KΩ	½	28183	BTS-220K	Phase Inv. Grid
R16	220KΩ	½	28183	BTS-220K	Phase Inv. Plate
R17	220KΩ	½	28183	BTS-220K	2nd AF Amp. Grid
R18	1500Ω	½	28160	BTS-1500	2nd AF Amp. Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R19	100KΩ	½	28006	BTS-100K	2nd AF Amp. Plate
R20	220KΩ	½	28183	BTS-220K	2nd AF Amp. Grid
R21	100KΩ	½	28006	BTS-100K	2nd AF Amp. Plate
R22	10KΩ	½	28170	BTS-10K	Output Grid
R23	10KΩ	½	28170	BTS-10K	Output Grid
R24	100KΩ	½	28006	BTS-100K	Output Grid
R25	10KΩ	½	28170	BTS-10K	Output Grid
R26	10KΩ	½	28170	BTS-10K	Output Grid
R27	100KΩ	½	28006	BTS-100K	Output Grid
R28	220Ω	½	28150	BTS-220	Output Screen
R29	220Ω	½	28150	BTS-220	Output Screen
R30	3.3Meg	½	28197	BTS-3.3Meg	Feedback
R31	3.3Meg	½	28197	BTS-3.3Meg	Feedback
R32	1250Ω	25	46378	2½DA-1250	Filter - Wire Wound
R33	5600Ω	½	28167	BTS-5600	Filter - Wire Wound
R34	3300Ω	½	28164	BTS-3300	Filter - Wire Wound
R35	5000Ω	40	46380	4½E-5000	Voltage Divider - Wire Wound
R36	220KΩ	½	28183	BTS-220K	Voltage Divider
R37	2700Ω	½	28163	BTS-2700	Bias Network
R38	90Ω	25	46377		Bias Network - Wire Wound
R39	10Ω	½	28134	BW-½-10	Series Pilot Light

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DENVER, COLORADO

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROM-CARLSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.2A	760VCT .380ADC	5VAC @ 6A	6.3VAC @ .46A SEC .4 6.3VAC @ 4.7A	46484			TP-393 ① & F0615 ① ②

① Drill new mounting holes
② Mount above chassis

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	2.7KΩ CT	500Ω Taps @ 4, 8, 15, 250Ω	30Ω CT	10.7Ω Taps @ .2, .25 .32 & 6.8Ω	46474	A-3306①			① Drill new mounting holes

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			STROMBERG-CARLSON PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	2Amp.	25156	27958	312002	342001	

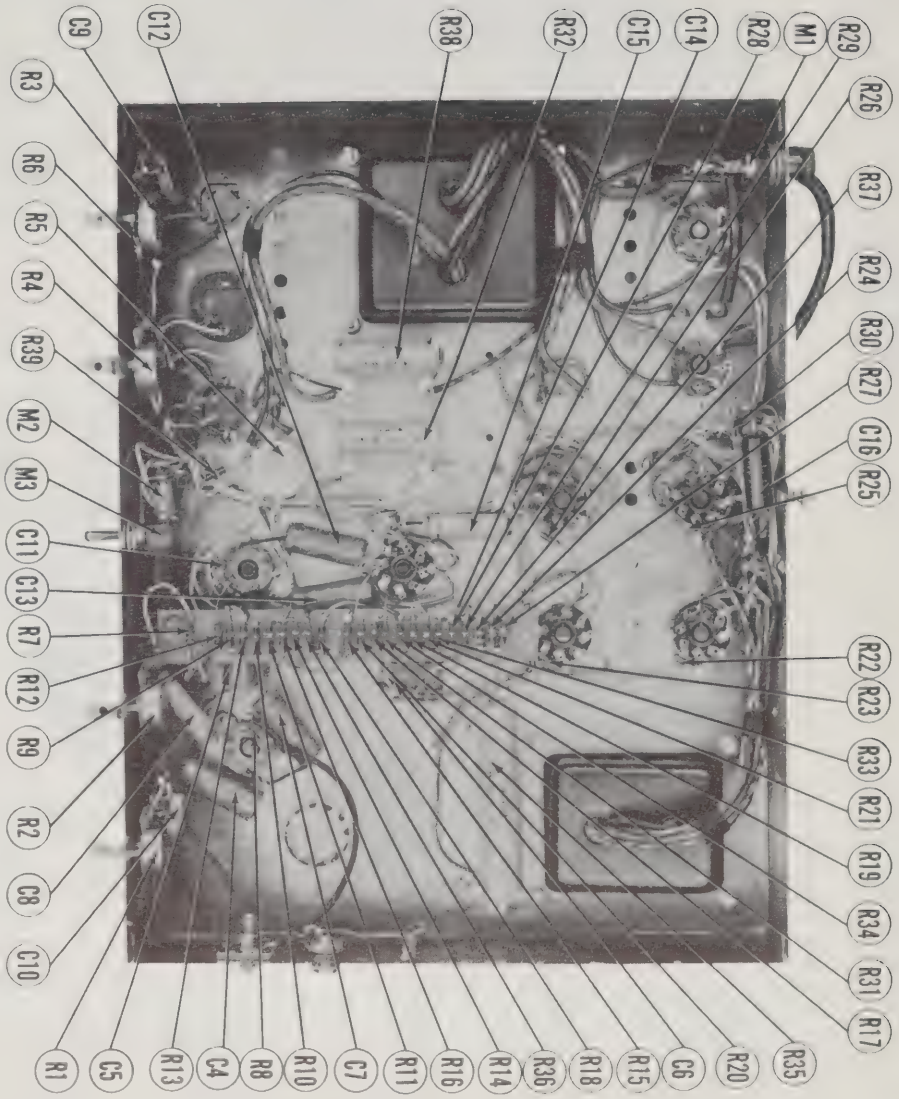
DIAL LIGHTS

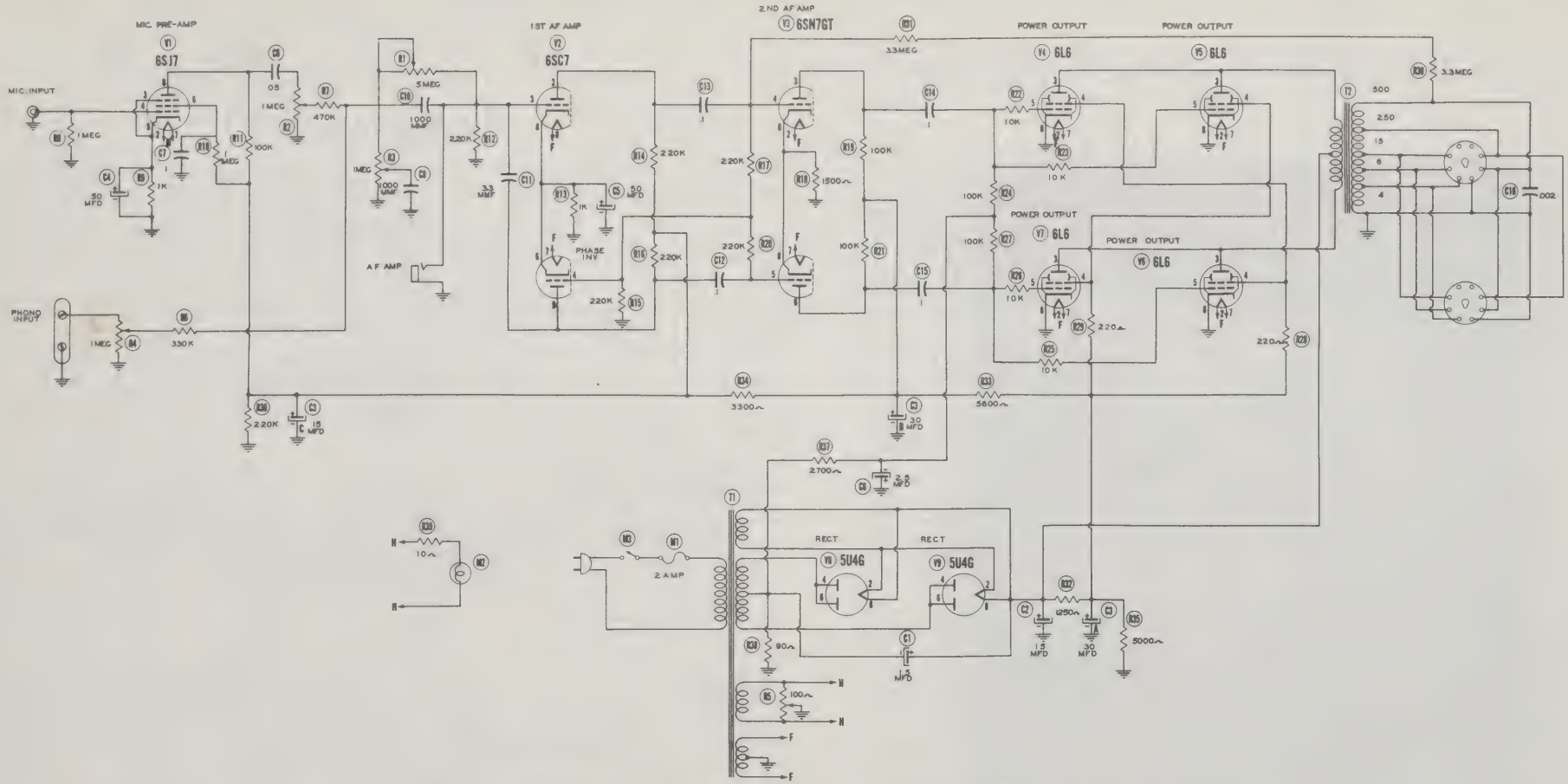
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					STROM-CARL PART No.		
M2	Bayonet	6-8	.15	Brown	30933		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	STROM-CARLSON PART No.	NOTES
M3	Switch	34694	On-Off
	Knob	32667	Large
	Knob	39840	Small

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ6	0V	†	1VDC	0V	1VDC	30VDC	†	150VDC
V 2	6SC7	0V	110VDC	0V	0V	110VDC	1.4VDC	†	†
V 3	6N7GT	0V	†	140VDC	0V	0V	140VDC	†	5.3VDC
V 4	6L6G	0V	†	380VDC	295VDC	-23VDC	-23VDC	†	0V
V 5	6L6G	0V	†	380VDC	295VDC	-23VDC	-23VDC	†	0V
V 6	6L6G	0V	†	380VDC	295VDC	-23VDC	-23VDC	†	0V
V 7	6L6G	0V	†	380VDC	295VDC	-23VDC	-23VDC	†	0V
V 8	5U4G	0V	380VDC	0V	340VAC	0V	340VAC	0V	380VDC
V 9	5U4G	0V	380VDC	0V	340VAC	0V	340VAC	0V	380VDC

† 6.3VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	.1Ω	1KΩ	1Meg	1KΩ	†1Meg	.1Ω	†110KΩ
V 2	6SC7	0Ω	†230KΩ	220KΩ	220KΩ	†230KΩ	1KΩ	.1Ω	.1Ω
V 3	6N7GT	0Ω	.1Ω	†105KΩ	440KΩ	440KΩ	†105KΩ	.1Ω	1.5KΩ
V 4	6L6G	0Ω	.1Ω	†15Ω	†1.5KΩ	110KΩ	100KΩ	.1Ω	0Ω
V 5	6L6G	0Ω	.1Ω	†15Ω	†1.5KΩ	110KΩ	100KΩ	.1Ω	0Ω
V 6	6L6G	0Ω	.1Ω	†15Ω	†1.5KΩ	110KΩ	100KΩ	.1Ω	0Ω
V 7	6L6G	0Ω	.1Ω	†15Ω	†1.5KΩ	110KΩ	100KΩ	.1Ω	0Ω
V 8	5U4G	Inf.	0.2KΩ	Inf.	115Ω	Inf.	115Ω	Inf.	0.2KΩ
V 9	5U4G	Inf.	0.2KΩ	Inf.	115Ω	Inf.	115Ω	Inf.	0.2KΩ

† MEASURED FROM PIN 8 OF V9

THE COOPERATION OF THE MANUFACTURER OF THIS
EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage meaintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected

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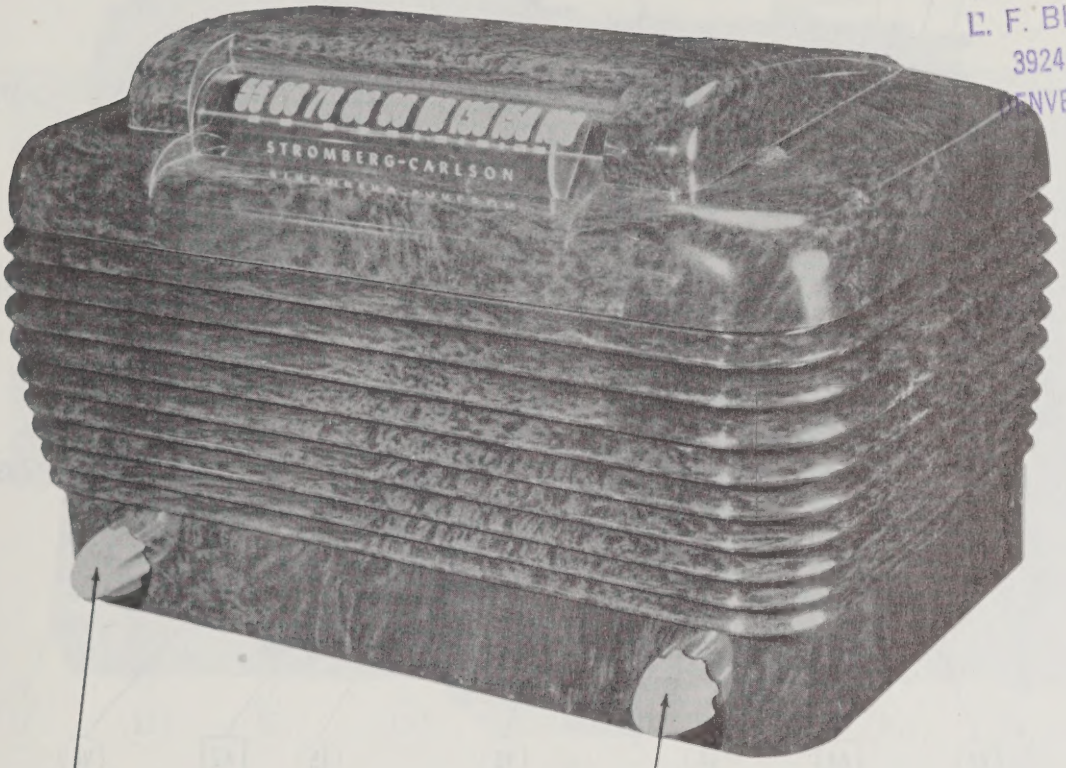

STROMBERG-CARLSON
MODEL 1500

STROMBERG-CARLSON MODEL 1500

TRADE NAME	Stromberg-Carlson, Model 1500
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, New York
TYPE SET	AC-DC Operated Superheterodyne Receiver With Loop Antenna
TUBES (FIVE)	Types 12BA6 RF Amp., 12BE6 Converter, 12BA6 IF Amp., 12AV6 Det.-AVC-AF, 50L6GT Power Output
POWER SUPPLY	110-120 Volts AC-DC
RATING	.275 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set the pointer to the index mark near the upper left hand end of the dial backplate.
Use isolation transfromer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

STROMBERG-CARLSON
MODEL 1500

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		STROM-CARL PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V5	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	STROM-CARL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	200	111032	AF88F		UPE4425		TVL-2460	■ Filter
B	40	200							▲ Filter
C2	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C3	47		110458	SI47	D6-470	5W5Q5	GPIK-47	19C25	Osc. Grid Cap
C4	.05	400	40632	P488-05	DF-503	PTE4S5		72P51	Line Isolation
C5A	100		*110478	SI100	PC-50	5W5T1	GPIK-100	19C11	Diode RF Filter
B	100			SI100		5W5T1	GPIK-100	19C11	Diode RF Filter
C6	.005	600	27760	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C7	470		110464	SI470	D6-471	5W5T5	GP2K-470	19C15	AF Amp. Plate
C8	.005	600	27760	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C9	.05	400	40632	P488-05	DF-503	PTE4S5		4TM-S5	Output Plate
C10	.05	400	40632	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

* Items C5A, C5B and R6 are combined into one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	Strom-Carl. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1Meg	½	145032	Q13-137	AG-63-Z	B-70-S	Volume Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R1A Per Instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A Per Instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	STROM-CARL PART No.	IRC PART No.	
R2	6.8Meg	½		BTS-6.8Meg	AVC Network - See Note 1
R3	22K	½	149109		Osc. Grid
R4	2.2Meg	½	149121	BTS-2.2Meg	Voltage Divider
R5	2.2Meg	½	149121	BTS-2.2Meg	AVC Network
R6	47KΩ	½	110478 *	BTS-47K	Diode Filter
R7	4.7 Meg	½		BTS-4.7Meg	AF Amp. Grid - See Note 1
R8	330KΩ	½	149116	BTS-330K	AF Amp. Plate
R9	150KΩ	½		BTS-150K	Output Grid - See Note 3
R10	150KΩ	½		BTS-150K	Output Grid - See Note 3
R11	220Ω	1		BW-1-220	Output Cathode - Wire Wound - See Note 2
R12	1800Ω	2	149047	BTB-1800	Filter
R13	27Ω	3	148224		Surge Limiter - Wire Wound
R14	120Ω	2	149035	BW-2-120	Pilot Light Shunt - Wire Wound
R15	Special		149243		Line Dropping - See Note 4
R16	220KΩ	½	149115	BTS-220K	Isolation

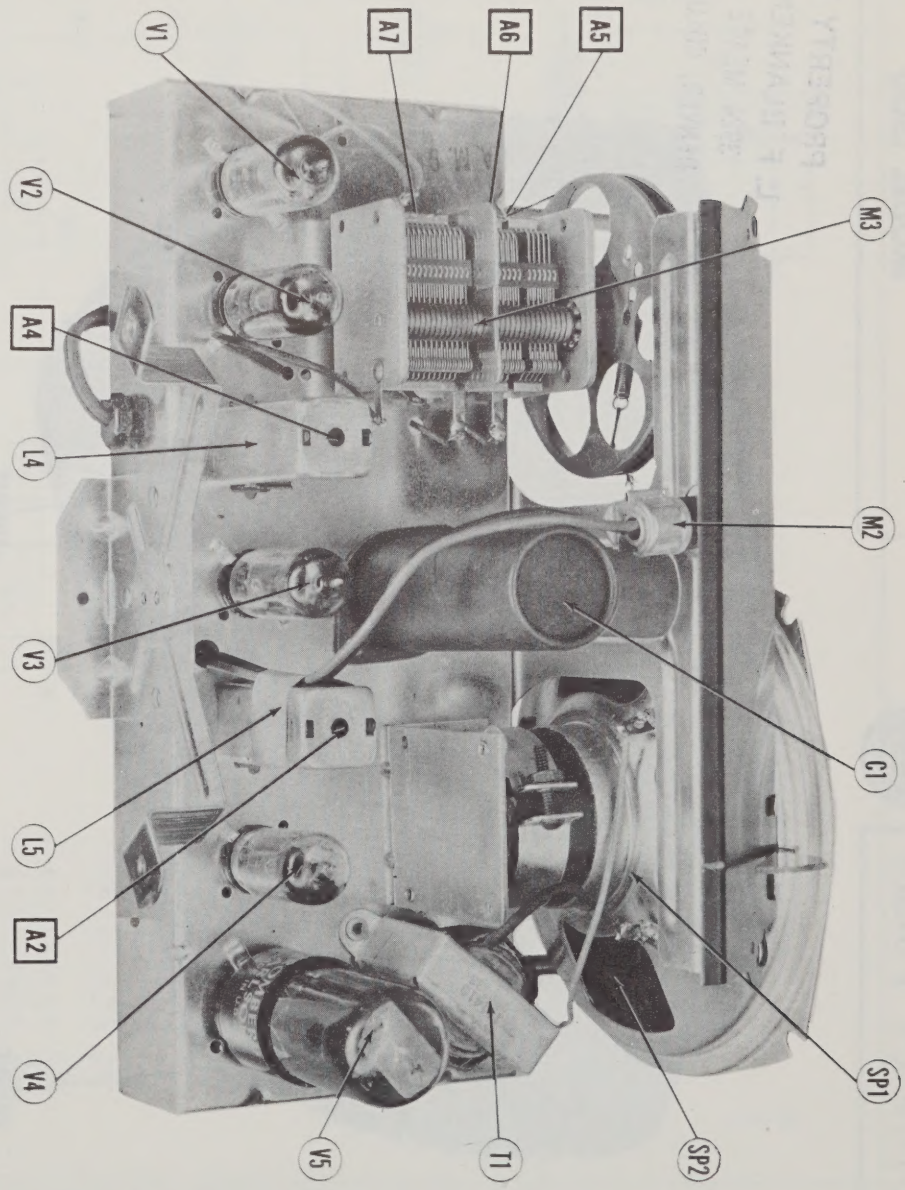
* Items R6, C5A and C5B are combined into one unit.

Note 1. Some sets use 10meg resistor in this application.
Note 2. Some sets use 150Ω resistor in this application.
Note 3. Some sets use 470K resistor in this application.
Note 4. Special Negative Temp. Coefficient Resistor 1400Ω Cold, 100Ω Hot. Order From Original Mfgr.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.1KΩ	3Ω	173Ω Tap 7.5Ω	.73Ω	161413	A-3330	A-3031		

CHASSIS—TOP VIEW



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PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: STROM-CARL PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD RES.	V. C. IMP.				
SP1	PM	3Ω	15187	ST-803 Mod. P525-V	52A1 ①	① Use Universal Mounting Brackets
	CONE DIA.	V. C. DIA.				
SP2	5 5/16"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: STROM-CARL PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L1	Loop Antenna	3.5Ω		139035		
L2	RF Coil	1.2Ω	8.8Ω	114055		Secondary Tapped at 5Ω
L3	Osc. Coil	.7Ω	8Ω	114056		
L4	1st IF	20Ω	20Ω	114336		
L5	2nd IF	10Ω	10Ω	114337		

SELENIUM RECTIFIER

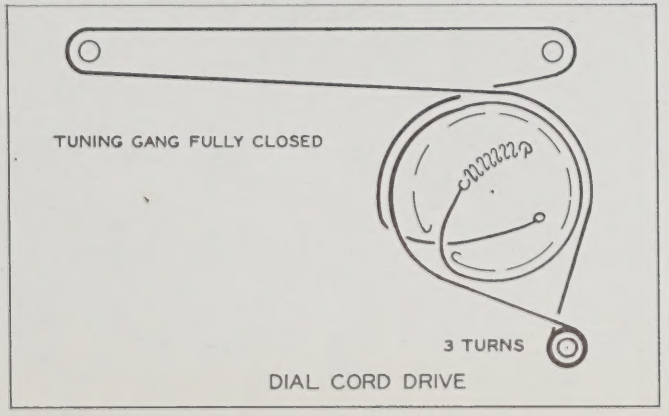
ITEM No.	RATING CURRENT	REPLACEMENT DATA: STROM-CARL PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M1	.055ADC	162034	NB-5	5M4	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: STROM-CARL PART No.	REPLACEMENT DATA	NOTES
M2	Bayonet	6-8	.15	Brown	30933		Type #47

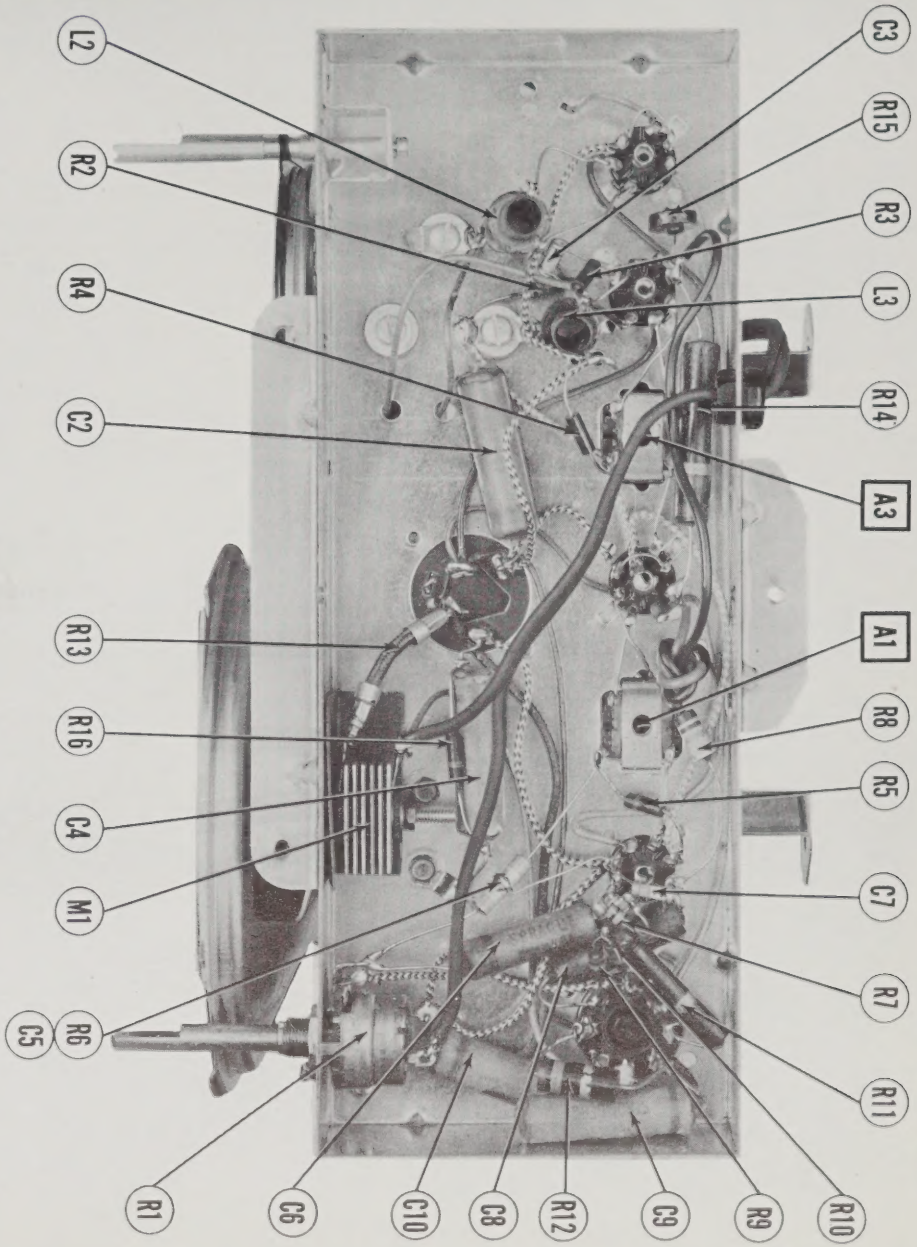
MISCELLANEOUS

ITEM No.	PART NAME	STROM-CARL PART No.	NOTES
M3	3 Gang Var. Cap	110026	(30-488MMF, 17-245MMF, 14-105MMF)
	Dial Pointer	144018	
	Walnut Cabinet	108065	
	Ivory Cabinet	108066	
	Red Cabinet	108169	
	Tan Cabinet	108170	
	Brown Knob	134004	
	Ivory Knob	134005	
	Black Knob	134137	



DIAL CORD DRIVE

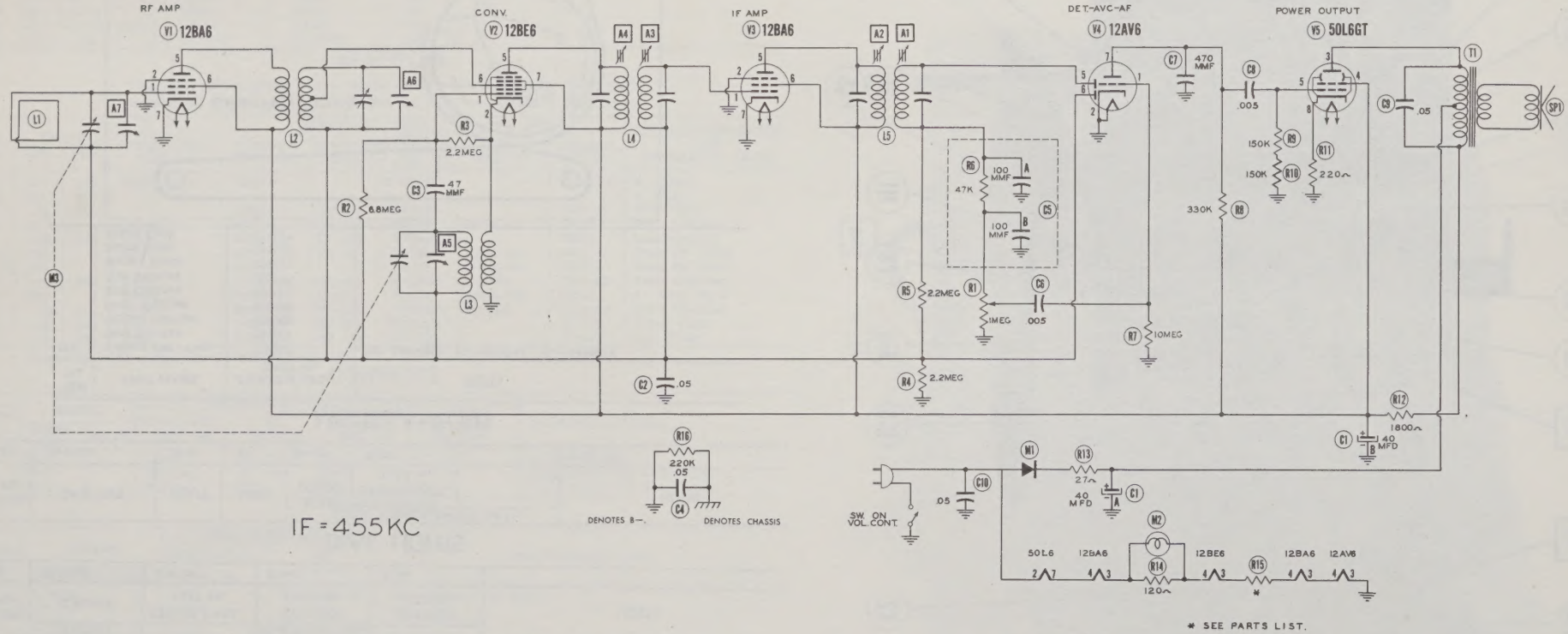
CHASSIS—BOTTOM VIEW



SET 132 FOLDER 15

STROMBERG-CARLSON MODEL 1500

STROMBERG-CARLSON MODEL 1500



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BA6	-.8VDC	0V	13VAC	25VAC	75VDC	75VDC	0V	
V 2	12BE6	3-5.4VDC	0V	37VAC	50VAC	75VDC	75VDC	-.8VDC	
V 3	12BA6	-.8VDC	0V	54VAC	66VAC	75VDC	75VDC	0V	
V 4	12AV6	-.8VDC	0V	0V	13VAC	-.5VDC	-.8VDC	50VDC	
V 5	50L6GT	125VDC	117VAC	120VAC	75VDC	0V	0V	66VAC	6.2VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BA6	1Meg	0Ω	13Ω	25Ω	†1.8KΩ	†1.8KΩ	0Ω	
V 2	12BE6	22KΩ	.7Ω	1.5KΩ	1.5KΩ	†1.8KΩ	†1.8KΩ	1Meg	
V 3	12BA6	1Meg	0Ω	1.5KΩ	1.5KΩ	†1.8KΩ	†1.8KΩ	0Ω	
V 4	12AV6	4.7Meg	0Ω	0Ω	13Ω	700KΩ	1Meg	†330KΩ	
V 5	50L6GT	†35Ω	1.5KΩ	†195Ω	†1.8KΩ	300KΩ	0Ω	1.5KΩ	220Ω

† MEASURED FROM OUTPUT OF M1

FILAMENT RESISTANCE MEASURED AT ROOM TEMPERATURE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.